

8E8096

Roll No. _____

Total No of Pages: 4**8E8096****B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018****Civil Engineering****8CE4.3A Earthquake Resistant Construction & Design****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 26***Instructions to Candidates:*

*Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

1. 1893 Part 12. NIL**UNIT-I**

Q.1 (a) Classify different types of earthquakes. [8]

(b) What is continental drift? Illustrate with an example. [8]

OR

Q.1 (a) Differentiate between body waves and surface waves and explain the characteristics of these waves. [8]

(b) Elaborate Reid's elastic rebound theory and plate tectonic theory. Name the major continental plates. [8]

UNIT-II

Q.2 (a) What are the instruments used for recording the ground shaking during the seismic activity? Discuss the working principle of these instruments. [8]

- (b) What are the structural and non-structural components of a building and how does each affect the performance of the building during the earthquake? [8]

OR

- Q.2 (a) What are the different failure modes of the masonry structures? [8]
 (b) What is the slenderness of a masonry wall? What are the measures to reduce the slenderness of the masonry walls? [8]

UNIT-III

- Q.3 Describe in detail, the measures to improve the lateral strength and stability of masonry wall. [16]

OR

- Q.3 (a) For the building shown in Fig. below, locate the centre of mass. The building has non-uniform distribution of mass as shown in the figure below. [8]

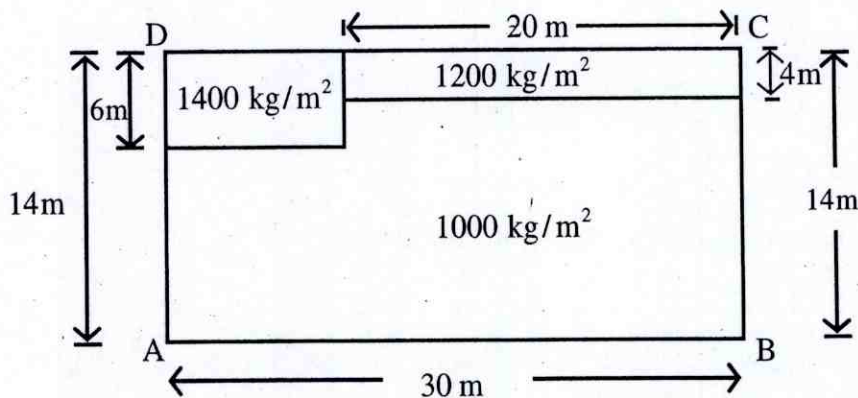


Fig – Plan of Building

- (b) Irregularities of mass, stiffness, and strength are not desirable in buildings situated in earthquake-prone areas. Describe using diagrams how these occur and effect the building. [8]

UNIT-IV

Q.4 What are the principles of earthquake-resistant design of RC buildings? Explain in detail. [16]

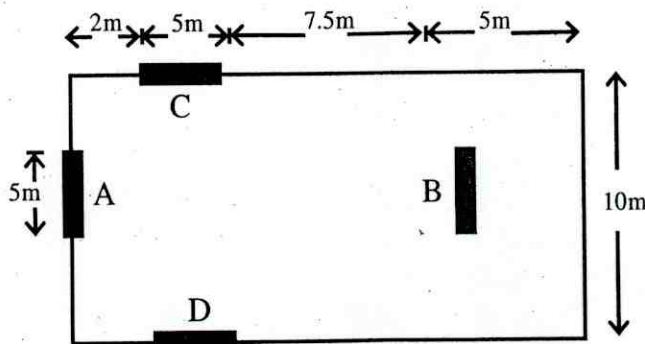
OR

Q.4 Answer the following questions (Any For) [4×4=16]

- (a) Depth of beam should not be more than One-Fourth of the clear span for RC members subjected to seismic forces. Why?
- (b) Positive steel at a joint face must be at least equal to half the negative steel at that face. Why?
- (c) In what ways do stirrups help RC beams?
- (d) Define shear wall. How are these classified?
- (e) Write a short note on “bond between reinforcing bars and concrete”.
- (f) Discuss the concept of flanged shear wall.

UNIT-V

Q.5 A simple one-storey building has two shear walls in each direction as shown in fig. below. It has some gravity columns that are not shown. All four walls are in M-25 grade concrete, 200mm thick, and 5m long. The storey height is 4m. The RC floor is cast in situ. Design shear force on the building is 200 kN in either direction. Compute design Lateral forces on different shear walls. [16]



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OR

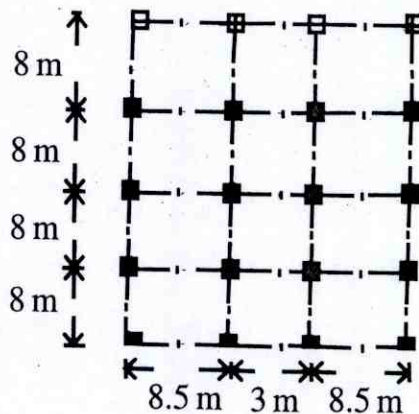
Q.5 (a) Write short note on (any - 3)

[3×3=9]

- (i) Inertial force
- (ii) Response spectrum factor
- (iii) Storey drift
- (iv) Soft storey
- (v) Isolating devices

(b) Plan of a five storey building is shown in-fig-below. Dead load including self weight of slab, finishes etc can be assumed as 3 KN/m^2 and live load as 4 KN/m^2 on each floor and as 1.5 KN/m^2 on the roof. Weight of partitions is 2 KN/m^2 . Determine the lateral forces and shears at different storey levels. [7]

Assume $Z = 0.24$, $I=1$, $R=5$, Soil type-2, Storey ht.=5



Plan

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<p style="font-weight: bold; font-size: 1.2em;">8E8093</p> <p style="font-weight: bold;">B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018</p> <p style="font-weight: bold;">Civil Engineering</p> <p style="font-weight: bold;">8CE3A Project Planning & Construction Management</p>		

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

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1. NIL _____

2. NIL _____

UNIT-I

Q.1 (a) Explain various stage and steps involved in project planning. [8]

(b) Discuss main causes of project failure. [8]

OR

Q.1 (a) Explain about Risk cost management. [8]

(b) Discuss function of project management. [8]

UNIT-II

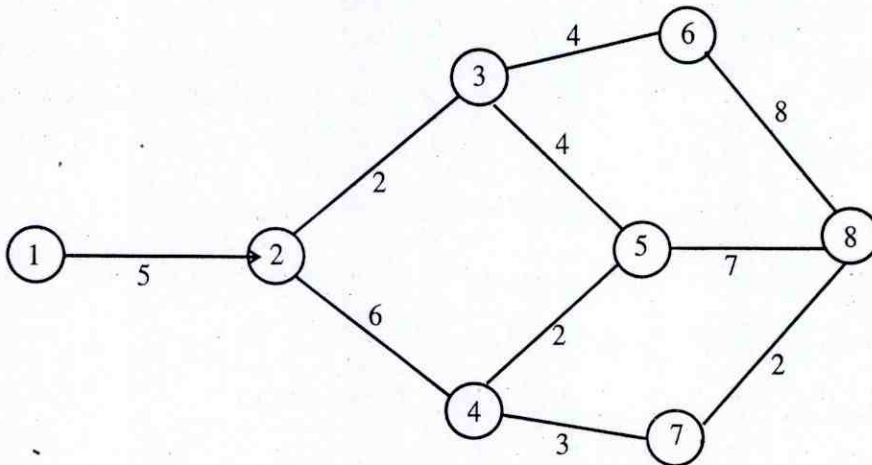
Q.2 (a) What is Project Scheduling? Explain importance of project scheduling. [8]

(b) Explain work break down process. [8]

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OR

Q.2 For the network shown in Fig. calculate the earliest start time, earliest finish time latest start time, latest finish time and total floats in Respect of all the activities of the network. [16]



UNIT-III

Q.3 (a) Explain Direct and Indirect Project cost. [8]

(b) Discuss Step in Resources allocation. [8]

OR

Q.3 A small project consisting of 7 activities A, B, C, D, E, F and G has its duration and cost data for normal and crash is given below. Draw the network crash to achieve optimum duration and optimum cost if the indirect cost is estimated to Rs. 180 per day of the project duration. [16]

Activity	Normal time (Days)	Cost (Rs.)	Crash time (Days)	Cost (Rs.)
A (1-2)	3	350	2	400
B (2-3)	6	1440	4	1620
C (2-4)	9	2160	8	2220
D (2-5)	7	1300	5	1600
E (3-5)	8	500	7	600
F (4-5)	5	1600	3	1770
G (5-6)	8	450	7	750

UNIT-IV

- Q.4 (a) What is Arbitration? Explain advantage of arbitration. [8]
- (b) Explain in brief about contract document. [8]

OR

- Q.4 (a) Discuss lump sum and scheduled contract. [8]
- (b) Explain important condition of contract. [8]

UNIT-V

- Q.5 (a) Explain safety measure for Hot Bituminous works. [8]
- (b) Discuss causes and prevention of accidents at construction site. [8]

OR

Q.5 (a) Explain safety measures for demolition. [8]

(b) What are the benefits of computerized information system? [8]

8E8092

Roll No. _____

Total No of Pages: 4**8E8092****B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018****Civil Engineering****8CE2A Design of Steel Structures - II****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 26***Instructions to Candidates:*

*Attempt any **five** questions, selecting **one** question from each unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

1. NIL2. NIL**UNIT-I**

Q.1 Design a gantry girder supporting an electrically operated crane to the following data: [16]

(a) Capacity of the crane = 100 kN

(b) Span between the crane rail = 20 m

(Centre to centre distance between gantry rails)

(c) Weight of crane girder = 90 kN

(d) Minimum hook approach = 1.1 m

(e) Wheel base = 2.5 m

(Distance between wheel centres)

(f) Span of gantry girder = 5.5 m

(Centre to centre distance between columns)

(g) Weight of gantry girder with rails = 8 kN

(Excluding crab, electric motor)

(h) Weight of crab, electric motor = 20 kN

hook

Take steel of grade Fe 410

OR

Q.1 (a) Explain the applications of Following:-

[4]

- (i) Pre – engineered industrial roofs
- (ii) Tabular trusses

(b) Design purlins for a pitched roof of a workshop with effective span of 15 m. The supporting trusses are provided at a spacing of 3.5 m. The purlins are spaced at 1.5 m. centers. The roof is inclined at 30° to the horizontal. Assume the dead load of the roofing to be 160 N/m^2 and that the wind pressure in 1200 N/m^2 normal to roof.

[12]

UNIT-II

Q.2 Design the welded plate girder of span 25m laterally restrained throughout with intermediate stiffeners using post critical method. If non to support a uniformly distributed load of 80 kN/m in whole span excluding self Weight.

[16]

OR

Q.2 Write short notes on:-

- (a) Stiffeners and its utility in plate girder
- (b) Curtailment of Flanges
- (c) Splicing in plate girder

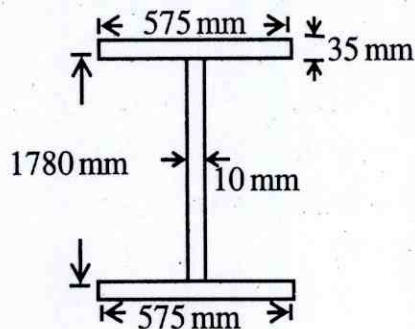
[2]

[2]

[2]

(d) The section of a welded plate girder consists of flange plates $575 \text{ mm} \times 35 \text{ mm}$ and a web plate $1780 \text{ mm} \times 10 \text{ mm}$. Determine the moment capacity of the section, and shear resistance corresponding to web buckling. Intermediate stiffness are not present. Assume Fe 415 grade.

[10]



UNIT-III

Q.3 Design a deck type plate girder bridge for single track BG main line loading (As per Rail Bridge loading), for following DATA:- [16]

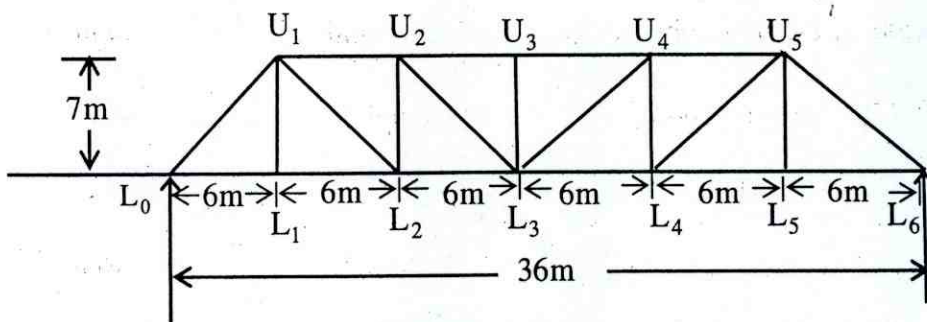
- (a) Effective span of Bridge : 25m
- (b) Spacing of plate girder : 2.0m
- (c) Sleepers used (timber) : 3000 mm × 300 mm × 150 mm
- (d) Spacing of sleepers : 600 mm c/c.
- (e) Density of timber : 9 kN/m³
- (f) Weight of main rails : 0.5 kN/m (Stock rail)
- (g) Weight of guard rails : 0.25 kN/m (Cheek rail)
- (h) Weight of Fastenings : 0.30 kN/m (Per track)

Permissible stresses on per Railway steel bridge code.

OR

Q.3 (a) Draw a neat diagram for the following:- [8]

- (i) Through type plate girder with stringer, cross beams, rails, sleeps.
- (ii) Through type truss Girder Bridge with bracing and other arrangement
- (b) For a PRATT TRUSS on under draw influence diagram for member $U_2 U_3$, $U_2 L_3$ and $L_2 L_3$. Using ILD find design forces in these members due to DL inclusive of self Weight 20kN/m & also due to LL 50 kN/m when Longer span is fully loaded. [8]



UNIT-IV

Q.4 (a) Explain foot bridge with neat sketch giving type of these, giving different uses for citizens. [6]

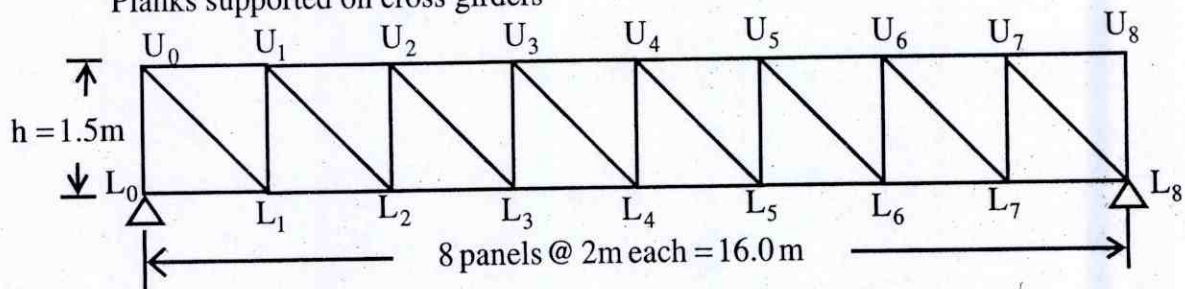
(b) Give design steps for through type steel truss foot Bridge in general. [10]

OR

Q.4 Design member U_3U_4 , U_3L_3 & U_3L_4 of a foot bridge having following data:- [16]

- (a) Type of truss : Lattice types
 (b) Span : 16m c/c of bearings (8 panel @ 2m each = 16m)
 (c) Cross Girders Spaced : 2m centres
 (d) Clear working width between main truss : 2.5m
 (e) Pedestrian traffic : 4000N/m^2
 (f) Flooring to be made of timber : 60mm, density 8000 N/m^3

Planks supported on cross girders

UNIT-V

Q.5 Design an over head circular steel tank with hemispherical bottom for capacity 2,00,000 litres. It is supported on 6 columns uniformly placed along periphery, For which $M = -0.01482 WR$, $T = 0.00151 WR$ and $F = \frac{W}{12}$ may be taken. [16]

OR

Q.5 Design an elevated riveted steel rectangular tank, with flat bottom for a capacity of 1,40,000 litres. The tank may be assumed to be supported on 6 numbers of columns. [16]

8E8091

Roll No. _____

Total No of Pages: 4**8E8091****B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018****Civil Engineering****8CE1A Water Resources Engineering - II****Time: 3 Hours****Maximum Marks: 80
Min. Passing Marks: 26***Instructions to Candidates:*

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

1. NIL2. NIL**UNIT-I**

Q.1 (a) Describe the necessity of providing a canal fall. What are the factor to be considered, while deciding the location of fall? [8]

(b) Differentiate between aqueduct and siphon aqueduct. What are the consideration made is selection of suitable type of cross drainage work? [8]

OR

Q.1 Design a Sarda type fall for the following data: [16]

(i) Full supply discharge : $\frac{U/S}{D/S} = 45 \text{ Cumec}$

(ii) Full supply level : $\frac{U/S}{D/S} = \frac{218.30\text{m}}{216.80\text{m}}$

(iii) Full supply depth : $\frac{U/S}{D/S} = \frac{1.8\text{m}}{1.8\text{m}}$

- (iv) Bed width : $\frac{U/S}{D/S} = \frac{26m}{26m}$
- (v) Bed level : $\frac{U/S}{D/S} = \frac{216.50m}{215.00m}$
- (vi) Drop : = 1.5m.

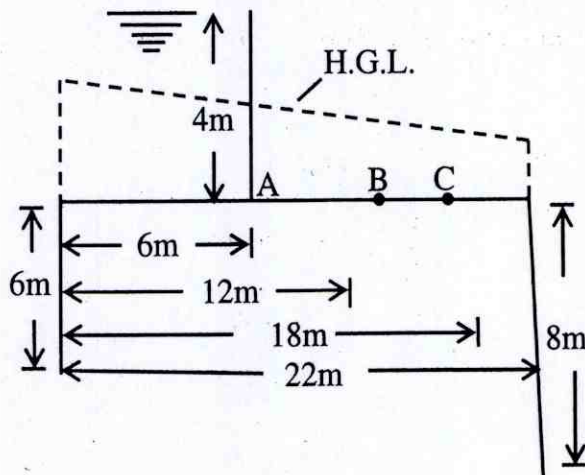
Design the floor on Bligh theory taking coefficient of creep = 8. Safe exit gradient may be taken equal as $1/5$.

UNIT-II

- Q.2 (a) Draw a neat diagram for a diversion headwork and explain the component parts of it. [8]
- (b) Describe the hydraulic and structural aspect of design of weir and barrage. [8]

OR

- Q.2 (a) Fig. shows the section of a hydraulic structure founded on sand. Calculate the average hydraulic gradient. Also find the uplift pressure at points 6, 12 and 18m from the U/S end of the floor and find the thickness of the floor at these points taking $i = 2.24$ [10]



- 1149
- (b) A stream has a width of 30m depth of 3m and a mean velocity of 1.25 m/sec.

Find the height of weir to be built on the stream floor to raise the water level by

1m. Assume value of discharge coefficient as 0.95 [6]

UNIT-III

Q.3 (a) Describe the Phreatic line and its importance in an earth dam. Explain the graphical method of drawing flow net in an earth dam. [3+5=8]

(b) Explain the method of locating center of the critical slip circle of stability analysis of the slope of an earth dam. [8]

OR

Q.3 (a) What do you understand by elementary profile of a gravity dam? Derive expression for determining base width of such a dam based on: [10]

(i) Stress criterion

(ii) Sliding criterion

(b) Discuss in brief various modes of failure of a gravity dam. [6]

UNIT-IV

Q.4 (a) Enumerate various types of spillway. Describe chute spillway with neat sketch.

Also describe the design of its various components. [10]

(b) Write a short note on: [3×2=6]

(i) Cavitation

(ii) Draft tube

OR

- Q.4 (a) Describe the main component of a hydraulic scheme. [8]
- (b) Describe and sketch ogee shaped spillway with equation of its d/s and U/S profile. [8]

UNIT-V

- Q.5 (a) What are the applications of optimization technique in planning and design of irrigation system. [8]
- (b) What do you understand by computer aided irrigation design? [8]

OR

- Q.5 (a) Describe the environmental impact assessment of water recourse project. [8]
- (b) Write a short note on the following: [4×2=8]
- (i) Interlinking river
 - (ii) Application of G.I.S. in Water Recourse
-