

Seat No.	
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**B.E. (Civil) (Revised) (Semester - VII) Examination,  
December - 2018**

**SOLID WASTE MANAGEMENT (Elective-I)**

**Sub. Code : 67569**

**Day and Date : Saturday, 01 - 12 - 2018**

**Total Marks : 100**

**Time : 02.30 p.m. to 05.30 p.m.**

- Instructions:**
- 1) All questions are compulsory.
  - 2) Figures to the right indicate full marks.
  - 3) Make assumptions wherever necessary.
  - 4) Use of non-programmable calculator is allowed.

**SECTION - I**

**Q1) Answer any two of the following** **[2 × 8 = 16]**

- a) Explain the need of MSW management and classify the solid waste based on sources.
- b) State the composition of MSW. Describe the compositions.
- c) Write a detail note on Hazardous Waste Management.

**Q2) Answer any two of the following** **[2 × 9 = 18]**

- a) Explain with the help of flow diagram, the functional elements of Municipal Solid Waste Management.
- b) Define following Unit Operation w.r.t. SCS:
  - i) Pick up
  - ii) At-site
  - iii) Haul
- c) Explain in detail with help of figure the different types of Transfer Station.

**Q3) Answer any two of the following** **[2 × 8 = 16]**

- a) What is MRF? Explain the processes for MSW at these facilities with flow diagram.
- b) Explain with the figure the different types of air classifiers methods.
- c) What is recovery and recycling of solid waste? What are the major recoverable materials present in the MSW?



**P.T.O.**

**SECTION - II**

**Q4)** Answer any two of the following **[2 × 9 = 18]**

- a) What is Sanitary landfilling? What are the advantages and disadvantages of sanitary landfilling?
- b) Write the site selection criteria for sanitary landfilling.
- c) Explain the factors which affect production of leachate & landfill gas?

**Q5)** Answer any two of the following **[2 × 8 = 16]**

- a) Explain composting process of bio degradable MSW
- b) Explain mechanical composting plant with flow diagram.
- c) What are the important factors affecting composting? How they are controlled during composting?

**Q6)** Answer any two of the following **[2 × 8 = 16]**

- a) How does incineration help in the management of solid waste? Describe the incineration technologies.
- b) Explain the various elements of incineration system.
- c) Write the air pollution problem associated with incineration system and its control techniques.





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**B.E. (Civil) (Semester - VIII) (Revised)**  
**Examination, May - 2018**  
**SITE INVESTIGATION METHODS AND PRACTICES**  
**(Elective-III)**  
**Sub. Code : 67761**

Day and Date : Wednesday, 16 - 05 - 2018  
Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 100

- Instructions :
- 1) All questions are compulsory.
  - 2) Figures to the right indicate full marks.
  - 3) Make assumptions wherever necessary.
  - 4) Use of non-programmable calculator is allowed.

**SECTION-I**

**Q1) Attempt any Two:**

[18]

- a) What is Site Investigation (SI)? Write the objectives of Site Investigation (SI)?
- b) Why is site investigation important? What are the purposes of a site investigation.
- c) Explain with flow sheet the various stages in Site Investigation (SI) process.

**Q2) Attempt any Two:**

[16]

- a) What is Desk study? Explain the various general information required for desk study.
- b) Write a detail note on topographical map.
- c) Explain the walkover survey and Write the importance of local enquires.

P.T.O.



Q3) Attempt any Two:

- Name the different methods of seismic exploration and explain any one.
- Explain 'Electrical Resistivity Method' with neat sketch.
- Explain 'Acoustic Emission Methods'.

**SECTION-II**

Q4) Attempt any Two:

[18]

- Write advantages and disadvantages of insitu test.
- Explain 'Cone Penetration Test' with neat sketch.
- Explain 'Pressure meter test' with neat sketch.

Q5) Attempt any Two:

[16]

- What is need of soil sampling? List and explain the various types of soil samples.
- List the various soil samplers use to collect soil sample and explain any one with neat fig.
- Determine the area ratio of samplers for following data and comment on values.

Diameter	D2	D1
Split spoon sampler	50	35
Drive tube	100	90
Shelby tube	50	47

Q6) Attempt any Two:

[16]

- What are purposes of soil testing in the laboratory? List the names of soil classification tests and explain the purpose?
- List the names of soil testing in the laboratory for geo-technical parameters test and write the purpose of each test.
- Explain technical report format.





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Total No. of Pages : 2

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**B.E. (Civil) (Semester - VIII) Examination, May - 2018**

**WATER RESOURCES ENGINEERING - II**

**Sub. Code : 67749**

**Day and Date : Monday, 07 - 05 - 2018**

**Total Marks : 100**

**Time : 02.30 p.m. to 05.30 p.m.**

**Instruction : Attempt any three questions from each section draw neat figures.**

**SECTION - I**

- Q1)** a) Classify dams and explain with neat sketch various levels of reservoir [9]  
b) Define sedimentation. Explain various factors to control it. [8]
- Q2)** a) Enumerate various forces acting on dam and explain in detail effect of uplift pressure on stability of gravity dam. [9]  
b) Explain in detail various reasons of failure of earthen dam. [8]
- Q3)** a) Explain the necessity of spillway. Enumerate various types of spillways and draw sketch of side channel spillway. [9]  
b) Explain necessity of energy dissipation with various types of energy dissipaters. [8]
- Q4)** Write a note on any four. [4 × 4 = 16]  
a) Arch dam and Buttress dam  
b) Various types of Filters.  
c) Outlet through concrete and earthen dam  
d) Flow net  
e) Area - capacity elevation curve  
f) Instrumentation in dams



**P.T.O.**

SECTION - II

- Q5) a) Draw a typical layout of diversion headwork and explain function of each component. What are the causes of failure of weirs? [9]  
b) What is the necessity of canal lining. Explain in detail concrete lining. [8]
- Q6) a) What do you understand by cross drainage works? Explain aqueduct superpassage with neat sketch. [9]  
b) Explain Kennedy's and Lacey's silt theory for design of canal in alluvial soils. [8]
- Q7) a) Draw and explain with neat sketch principal components of hydroelectric scheme. [9]  
b) Classify rivers. Explain necessity of river training work and explain one of them in detail. [8]
- Q8) Write a note on any four. [4 × 4 = 16]  
a) Khosala and Bligh's theory.  
b) Canal falls and canal escape  
c) Interlinking of rivers - National perspective plan.  
d) Groynes  
e) Economics of canal lining  
f) Alignment of canal





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**B.E. (Civil) (Part-IV) (Semester - VIII) (Revised)**  
**Examination, May - 2018**  
**ADVANCED CONSTRUCTION TECHNIQUES (Elective-III)**  
**Sub. Code : 67764**

Day and Date : Wednesday, 16 - 05 - 2018

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) Solve any three questions from each section.
  - 2) Figures to the right indicates full marks.
  - 3) Make assumptions wherever necessary.

**SECTION-I**

- Q1) a)** State the importance of Plywood Formwork. [8]  
**b)** Define MDF. State their Advantages & Disadvantages & use. [8]
- Q2) a)** Define the term Land Reclamation. State advantages & disadvantages. [8]  
**b)** Explain Fibre reinforced concrete & application. [8]
- Q3) a)** Explain FRP their products & application. [8]  
**b)** Explain polymer composites with Advantages & disadvantages. [8]
- Q4) Short Note (Any Three)** [18]  
**a)** Define Geosynthetics. State Benefits & barriers.  
**b)** Drainage for land reclamation.  
**c)** Maintenance of Formwork.  
**d)** Thermosetting Adhesive



P.T.O.

SECTION-II

- Q5) a) Explain with neat sketch the operation of Nuclear power station. [8]  
b) State the Mechanism of Revibration of concrete. [8]
- Q6) a) Explain with neat Sketch the Vaccum Dewatering Process. [8]  
b) State the steps for Strengthening of Isolated Footing with neat sketch. [8]
- Q7) a) Explain the principle of Wind Mill. [8]  
b) What is Underpinning. [8]
- Q8) Short Note (Any Three): [18]  
a) Foundation Jacketing.  
b) Slip Formwork.  
c) Roller compacted Concrete  
d) State the benefits of Vaccum Dewatered Flooring to contractors, Architects, & Owner.





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**B.E. (Civil Engineering) (Part - IV) (Semester - VIII)**  
**Examination, May - 2018**  
**TRANSPORTATION ENGINEERING - II**  
**Sub. Code: 67750**

Day and Date : Friday, 11 - 05 - 2018

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) Solve any three questions from each section.
  - 2) Figures to the right indicate full marks.
  - 3) Make assumptions wherever necessary.

**SECTION - I**

- Q1)** a) Explain aim & objectives of Town Planning. [8]  
 b) Define zoning, state the objectives & Aspects of Zoning. [8]
- Q2)** a) Explain the salient features of Land Acquisition Act. [8]  
 b) Discuss the necessity of village Planning. [8]
- Q3)** a) Explain Transportation problems of Existing Towns. Suggest the remedies. [8]  
 b) Discuss the importance of Landscaping with reference to town planning. [8]
- Q4)** Short note (any three): [18]  
 a) Urban Renewal  
 b) Importance of Recreation Centres  
 c) MRTD Act  
 d) Slum & Causes of Slum

**SECTION - II**

- Q5)** a) State Merits & Demerits of Railways. [8]  
 b) Enlist the elements & necessity of Geometric Design of track. [8]

P.T.O.



- Q6) a) Enlist types of Station Yard. Explain any one. [8]  
b) State the classification of Railway Signals. [8]
- Q7) a) Explain the factors considered for selection of Ideal Bridge site. [8]  
b) Define & purposes of Bearing in Bridges. [8]
- Q8) Short note (any three): [18]  
a) Pipe Culvert  
b) Difference between Permanent & Temporary Bridges.  
c) Forces acting on Bridge Superstructure.  
d) Turn out-Define. Sketch Right Hand Turn Out.



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**B.E. (Civil Engineering) (Semester - VIII)**

**Examination, May - 2018**

**STRUCTURAL DESIGN OF FOUNDATION AND RETAINING STRUCTURES (Elective -II)**

**Sub. Code: 67753**

**Day and Date :Monday, 14 - 05 - 2018**

**Total Marks : 100**

**Time :2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) Solve any two questions from each section.
  - 2) Figures to the right indicate full marks.
  - 3) Use of IS 456- 2000 is allowed.
  - 4) Assume suitable data if necessary and mention it clearly.
  - 5) Use of non-programmable calculator is allowed.

**SECTION-I**

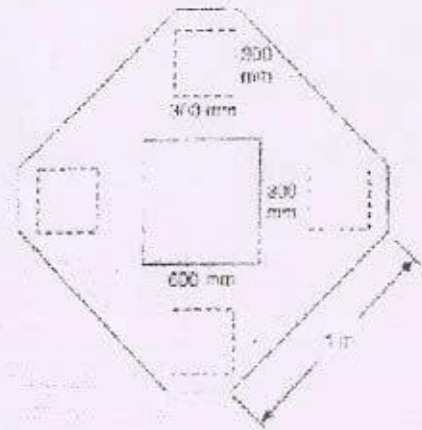
**Q1)** Design a rectangular combined footing for supporting two columns 400×400 mm in size to carry a load of 1000kN each. Center to center distance between the columns is 3.5m. The projection of the footing on either side of the column with respect to center is 1m. Safe bearing capacity of the soil can be taken as 190kN/m<sup>2</sup>. Use M20 concrete and Fe-415 steel. [25]

**Q2) a)** A column carrying a load of 2500kN has to be supported on 4piles of size 300mm × 300 mm. The piles are spaced at 1 m centre to centre. The column size is 600mm × 600mm. Design the pile cap. Use M20 and Fe 415 steel. [15]

**P.T.O.**







b) Explain in detail group action of piles and derive the necessary formula. [10]

Q3) It is proposed to provide a common foundation for eight columns carrying loads as indicated in the figure. Design the foundation. Safe bearing capacity of the soil is  $100 \text{ kN/m}^2$ . All columns are  $400 \text{ mm} \times 400 \text{ mm}$ . Use M20 concrete and Fe 415 steel. [25]

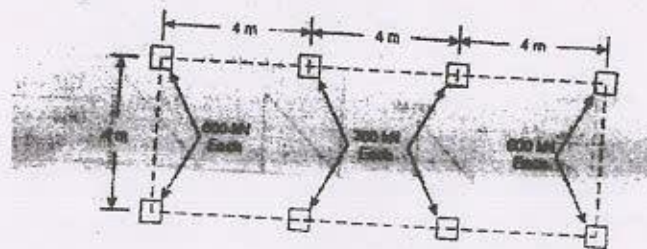


Fig. 28.94.

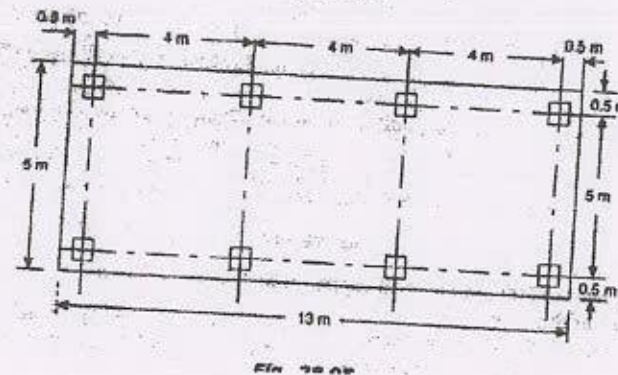


Fig. 28.94.

## SECTION-II

- Q4) a) Explain lateral stability analysis of well foundation? [12]  
 b) What are the different types of well foundation, Explain each type with neat sketch? [13]
- Q5) A stem of cantilever retaining wall is 3.5m high above ground level. The wall retains soil up to its top. Soil embankment is horizontal at top of retaining wall. Design heel, toe and stem of retaining wall. The soil bearing capacity is  $140 \text{ kN/m}^2$ . The specific weight of soil is  $18.5 \text{ kN/m}^3$ . The angle of repose is  $30^\circ$ . Coefficient of friction between soil and concrete is 0.60. Use grade of concrete  $M_{20}$  and grade of steel Fe 415. Also draw cross section showing reinforcement details. [25]
- Q6) a) Explain with neat sketch rubble mound breakwater also state its advantages? [12]  
 b) Design armor of rubble mound break water if depth of water is 14 m and wind velocity is  $155 \text{ km/hour}$ . The fetch of wave is observed to be  $200 \text{ km}$ . Allowable bearing pressure on rock is  $800 \text{ kN/m}^2$ . [13]

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Total No. of Pages : 3

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B.E. (Civil Engg.) (Semester - VII) (New) Examination, April - 2018

## EARTHQUAKE ENGINEERING

Sub. Code : 67559

Day and Date : Wednesday, 25- 04 - 2018

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) Figures to the right indicate full marks.
  - 2) Assume any suitable data whenever necessary.
  - 3) Use of non-programmable calculator and I.S. 1893 : 2002 (Part - I) are allowed.

SECTION - I

- Q1) a) Differentiate [8]
- i) Magnitude & Intensity
  - ii) Seismograph Vs Seismogram
  - iii) S wave & Love wave
  - iv) Inter-plate & Intra-plate earthquakes
- b) Elaborate on the seismic waves developed during earthquake and its effects on structure. [8]
- Q2) a) Derive the equation of motion and its solution for forced damped vibration system. [8]
- b) A SDOF vibrating system is having mass 300 kg, spring stiffness 240 N/m and coefficient of viscous despot 0.06 kN - sec / m. [10]

Determine

- i) the natural frequency
- ii) the damping coefficient
- iii) logarithmic decrement
- iv) the ratio of two successive amplitudes
- v) the number of cycles after which the original amplitude is reduced to 50%.

OR

P.T.O.



SV-26

- b) It is required to determine the frequency and damping of a SDOF system having mass of 2000 kg by forced vibration test. It is subjected to a harmonic loading of amplitude 1000 N with gradually increase in excitation frequency. It is observed that the resonance occur at an excitation frequency of 54 rad/s and corresponding maximum displacement is 20 mm. [10]

Determine

- i) natural frequency
- ii) damping ratio
- iii) damping coefficient
- iv) stiffness of system

- Q3) Calculate the base shear for a four storey hospital building having special moment resisting frame (SMRF) located in Pune on medium soil with following data. [16]

- a) No. of bay in x and y-direction = 4
- b) Width of each bay = 5 m
- c) Thickness of slab = 150 mm
- d) Storey height = 3 m
- e) Size of beam and column = 300 mm x 450 mm
- f) Amount of damping = 10 % of critical damping
- g) Live load = 4 kN/m<sup>2</sup>

Assume any additional data if required and neglect the weight of the infill wall panels.

SECTION - II

- Q4) a) Explain concept of ductile detailing & explain factor affecting the ductility of structures in detail. Explain ductile detailing of beam as per IS 13920-1993. [10]
- b) Explain four virtue of good earthquake resistant design. [8]
- OR
- b) Explain soft storey? Explain how soft storey problems can be eliminated in the existing buildings. [8]

## SV-26

- Q5) a) Discuss in detail the advantage of horizontal bands and vertical reinforcement in the masonry buildings. [8]
- b) Describe various strengthening methods for RCC columns and beams through illustrative sketches. [8]
- Q6) a) Explain the term active and passive control system? [8]
- b) Explain dissipation mechanisms of Lead-Rubber Bearing? [8]

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Total No. of Pages : 3

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B.E. (Civil) (Part-IV) (Semester - VIII)

Examination, May - 2018

DESIGN OF CONCRETE STRUCTURES-II

Sub. Code : 67748

Day and Date : Friday, 4 - 05 - 2018

Total Marks : 100

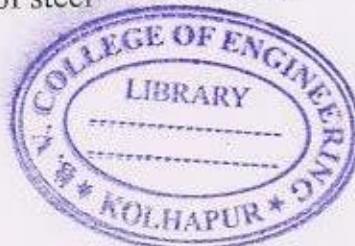
Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) Attempt any Three questions from each section.
  - 2) Figures to the Right Indicates full marks.
  - 3) Assume suitable data wherever necessary and mention it clearly.
  - 4) Use of non programmable calculator is allowed.
  - 5) Use of relevant IS Codes are allowed.

SECTION-I

- Q1) a) Design RCC beam 300mm wide and 500mm overall depth is subjected to factored B.M. of 65 kN.m Factored torsion moment of 45 KN.m and factored shear force of 65KN. Design the beam for torsion reinforcement using LSM. Use M20 and Fe415. [16]
- Q2) Design three span continuous beams having equal span of 5m. Beam support live load of 15KN/m and dead load of 18KN/m. Using IS code provisions Design the beam. Use M20 grade of concrete and Fe 415 grade steel. Draw longitudinal section of beam showing reinforcement details. [16]
- Q3) Design RCC rectangular water tank resting on ground, for plan dimension of 4m×3m and height of water is to 2.5m and free board 0.3m. Use M20 grade of concrete and Fe415 grade of steel. [18]
- Q4) Derive the constants or coefficients for singly reinforced balanced rectangular section (WSM). [16]
- a) Constant for N.A.
  - b) Constant for lever arm
  - c) Constant for moment of resistance
  - d) Constant for percentage of steel

P.T.O.





SECTION-II

- 5) a) Draw different cable profiles and explain their suitability for different loading conditions. [8]
- b) Explain why 'High strength concrete and high strength tensile steel is necessary in pre-stressed concrete'. [8]

- 6) An unsymmetrical I-section beam is used to support and imposed of 2KN/m over span of 8m. Sectional details are top flange 300×60mm bottom flange 100×60mm and web 80×280mm. At center of beam the effective pre-stressing force of 100KN is located at 50mm from soffit of beam. Estimate stress at center of beam for following load conditions. [16]

- a) At transfer stage
- b) At service stage

- 7) A post tensioned concrete beam spanning 10m and having a cross section 200mm×300mm deep is pre-stressed with cable having an area of 320mm<sup>2</sup> located at a constant eccentricity of 50mm. The initial stress in cable is 1000N/mm<sup>2</sup>. Calculate the percentage loss of stress in the cable using

Relaxation of steel=5%

Shrinkage strain= $2 \times 10^{-4}$

Creep coefficient=1.6

Frictional coefficient= $15 \times 10^{-4}/m$

Slip in anchorage=1mm

$E_s = 210 \text{ KN/mm}^2$

$E_c = 35 \text{ KN/mm}^2$

[16]

- 8) Design a pre-stressed concrete rectangular beam with the following requirements

Effective span	=16 m
Superimposed load on beam	= 40 KN/m
Char. Strength of concrete $f_{ck}$	= 35N/mm <sup>2</sup>
Loss of pre stress is	=18%
Safe stress in concrete due to final pressers	=0.4 $f_{ck}$
Permissible tensile stress in concrete	=1N/mm <sup>2</sup>
Ultimate stress in tendon	=1600 N/mm <sup>2</sup>
Safe stress in tendon	=60% of ultimate stress.

[18]

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