

SUBJECT CODE NO:- P-3
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination May/June 2017
Design of Structure - I (Steel)
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Question No.1 and Q.No.6 are compulsory.
 - ii) Attempt any two questions from the remaining questions in section A and B each
 - iii) Use of IS 800-2007, IS 875, steel table and non-programmable calculator are allowed.
 - iv) Assume suitable data where required and mention it clearly in the answer sheet.

Section A

- Q.1 Attempt any five of the following. 10
- a. State various types of load acting on structure.
 - b. Explain why net area is to be considered in tension member
 - c. What is effective length in case of strut.
 - d. How to calculate live load for trusses.
 - e. Explain failure of bolts.
 - f. How to decide spacing of purlins.
- Q.2 a. Two plates 12mm thick are connected by a double bolted lap joint. Use 16mm diameter and 70mm pitch is provided. Find the load carrying capacity and efficiency of joint. 12
- b. Explain in detail, how the strength of weld is determined? 03
- Q.3 Design a tie member consists of two equal angle sections connected on same side of gusset plate 10mm thick to carry an axial load of 350 kN. Length of member is 2.75m. Also design end connection. Draw neat sketch showing design details. Take $f_y=250\text{MPa}$. 15
- Q.4 A column of 8m effective length has to support a load of 1200 kN. Design the column with two channel section or two I sections. Design the lacing system for column. Draw the sketch. 15
- Q.5 A column section ISHB 350 carries an axial load of 500 kN. Design a slab base if M20 concrete and SBC of soil is 220kN/m^2 . Draw the plan and section of the same. 15

Section-B

- Q.6 Attempt any five of the following. 10
- a. Write a note on web buckling
 - b. Explain in detail vertical stiffener
 - c. Why purlins are provided, State whether purlin is a tension member, compression member or flexural member.
 - d. State the factors affecting plastic moment capacity.
 - e. Differentiate between bending and buckling of beam.
 - f. Enlist different types of trusses.
- Q.7 Design laterally restrained beam to working load of 40 kN/m. The beam is simply supported for a length of 4.5m. The width of support is 300mm. Design the beam. Check for shear deflection, web buckling and crippling. 15
- Q.8 Design a plate girder of span 15m carrying loading inclusive self-weight of 65kN/m. The lateral supports are provided at point of support. 15
- Q.9
- a. Explain procedure for design of gantry girder. 08
 - b. A truss for a factory building is spaced at 4 m c/c. And purlins are a spaced at 2.1 m c/c. The span of truss 07

2017

is 16m. If the vertical load from the roof sheets are equal to 170 MPa, While wind load on roof surface normal to roof is equal to 1200 Mpa. Design the angle purlin.

- Q.10 A pratt truss for an industrial building for following data, Span=18 m, height of building =6m, length=30m, 15
location of building: Aurangabad, type of connection: welding, roofing material is AC sheets.
Carry out the preliminary sizing of the truss Which includes all the preliminary dimensions. Also calculate dead and live load at intermediate and end panel points. Draw a neat sketch.

Subject Code : 28

FACULTY OF ENGINEERING & TECHNOLOGY

T.E. Civil (Revised) Examination

APRIL/MAY, 2017

Engineering Geology

Time : Three Hours

Max. Marks: 80

“Please check whether you have got the right the question paper”

- Note:
- Q.No. 1 is compulsory and solve any two from remaining questions of Section-A.*
 - Q.No. 6 is compulsory and solve any two from remaining questions of Section-B.*
 - Neat and labeled diagrams must be drawn wherever necessary.*

SECTION – A

- Q.1 Write short notes on (Any Five) : 10
- Spheroidal weathering.
 - Isoseismal lines
 - Precambrian era
 - Peasolatic texture.
 - Metasomatism
 - Hypabyssal rock
 - Volcanic products.
- Q.2 (a) What are sedimentary rocks? Give the classification on the basis of grain size. 08
- (b) What are mountains? State various types of mountains. 07
- Q.3 (a) What are joints? Explain in detail primary joints. 08
- (b) What is rejuvenation of river? Explain stages of valley development. 07
- Q.4 (a) Give the brief account of super group. 08
- (b) What are folds? Describe overturned fold, isoclinal fold, plunging fold and Chevron fold. 07
- Q.5 (a) What is the difference between rock and mineral. State with examples. 08
- (b) Differentiate between intensity and magnitude of earthquake. 07

SECTION – B

- Q6 Write short notes on (Any Five) : 10
- Artesian well
 - Earth and mudflows
 - Silting of reservoirs
 - Prevention of landslides
 - Tunnel lining
 - Abutment problems.
- Q.7 (a) What are the difference between free groundwater and artesian water. 08
- (b) Discuss those geological situations. Which when ignored, could be the cause of the possible dam disaster. 07

P.T.O.

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Subject Code : 28

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- Q.8 (a) Compare the relative merits of tunnel alignments which are made 08
 Parallel to dip direction
 Parallel to strike direction
 Oblique to dip direction
- Q.8 (b) Explain the terms 07
 aquiclude
 Aquifer
 Juvenile water
 Connet water.
- Q.9 (a) Describe the characteristics of amygdaloidal basalt, propheritic basalt, columnar basalt. 08
- (b) Write the significance of rain water harvesting. 07
- Q.10 (a) Write a note on internal and external causes of landslides. 08
- (b) Explain in detail importance of core logging. 07

Subject Code : 60

FACULTY OF ENGINEERING & TECHNOLOGY
T.E. (Civil) (Revised) Examination
APRIL/MAY, 2017

Building Planning & Design

Time : Three Hours

Max. Marks: 80

“Please check whether you have got the right the question paper”

- Note:
- Q.No. 1 & 6 are compulsory.*
 - Attempt any two questions from remaining from Section A.*
 - Attempt any One question from remaining from Section B.*
 - Draw neat sketches wherever required.*
 - Use drawing sheet for Q.No. 6 of Section B.*
 - Figures to the right indicate full marks.*

SECTION – A

- Q.1 Answer any Five questions from the following : 10
- C.B.R.I. stands for -----
 - What is the purpose of providing living room?
 - Tracing paper is used for -----
 - Write range of ‘Rise’ and ‘tread’ dimensions for residential and public buildings.
 - What is winder?
 - What is septic tank?
 - What is submission drawing?
- Q.2 (a) With the help of neat sketches, explain ‘unity’ and contrast’ – principles of architectural composition. 08
- (b) Write a detailed note on different climate zones. 07
- Q.3 (a) What are building bye-laws? Discuss their objectives and benefits in detail. 07
- (b) Discuss aspect and prospect – principles of building planning. 08
- Q.4 (a) Write a note on testing drains and maintenance of house drainage system. 08
- (b) Discuss the desirable features required in the design of household septic tank. 07
- Q.5 (a) What factors should be considered while selecting site for any industry? 07
- (b) Discuss in detail the requirement to big industrial unit. 08

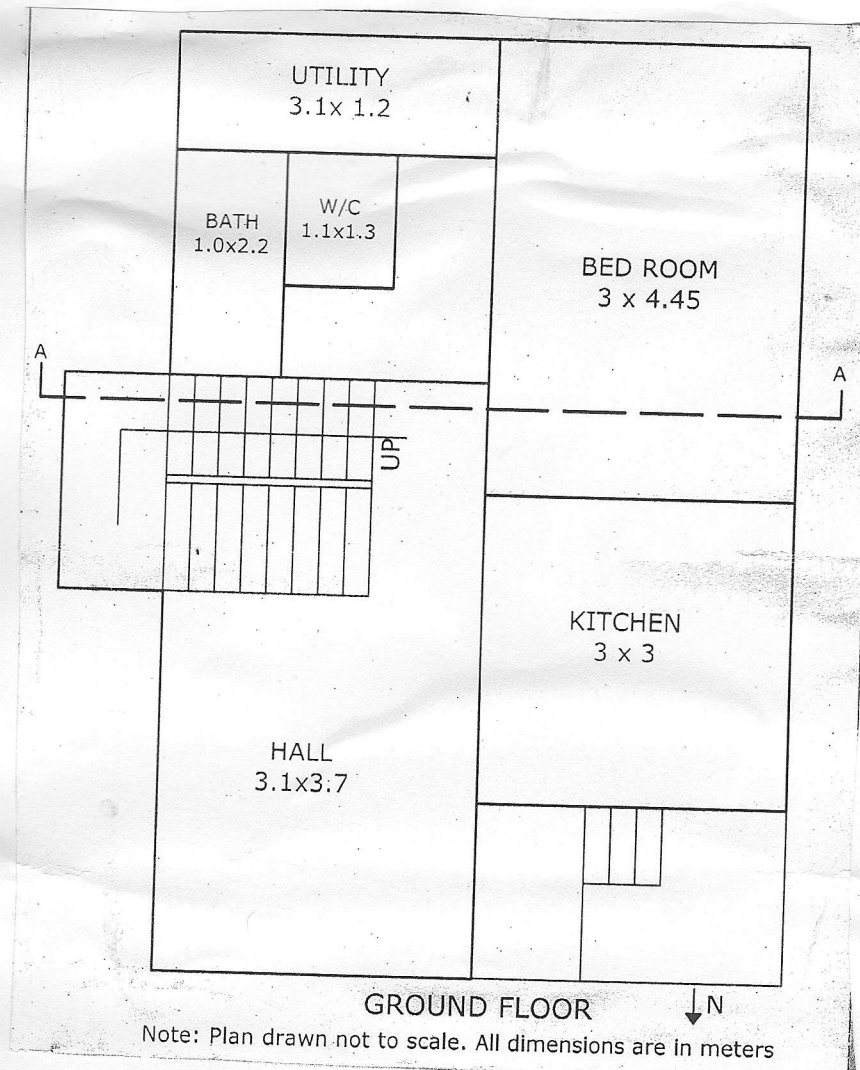
P.T.O.

P – 2017

Subject Code : 60

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SECTION - B



- Q.6 Figure above shows a typical land plan of a residential building. Draw to a suitable scale.
- | | | |
|-------|-------------------------------|----|
| (i) | Working drawing plan | 06 |
| (ii) | Section elevation (A - A) | 06 |
| (iii) | Front elevation | 06 |
| (iv) | Locate position of columns | 04 |
| (v) | Prepare schedule of openings. | 03 |
- Q.7 (a) What points are to be considered in planning of a departmental store? 07
- (b) Draw of line plan of a departmental store consisting of grocery section, cosmetic section, garment and electronics section in it. Assume suitable size. Show proper circulation space and other essential spaces. Use suitable scale. 08
- Q.8 (a) With the help of neat sketches, discuss the following perspective elements 08
- | | | |
|------|--------------------|--|
| (i) | Station Point (SP) | |
| (ii) | Picture Plane (PP) | |
- (b) Write a note on landscaping types and their materials. 07

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SUBJECT CODE NO:- P-93
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination May/June 2017
Transportation Engineering-I
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- 1) Q.1 from section A & Q.6 from section B are compulsory.
 - 2) Solve any two questions from remaining from each section.
 - 3) Figure to the right indicate full marks.

Section A

- Q.1 Explain the following terms [any five] 10
- a) Afflux
 - b) Economic span
 - c) Wing – wall
 - d) Approaches
 - e) Semi through bridge
 - f) Apron
 - g) Viaduct
 - h) Run – off
- Q.2
- a) What do you understand by river training? Explain the methods for river training in detail. 07
 - b) What are the basic patterns of run way configuration? Discuss each pattern. 08
- Q.3
- a) What is economic span for a bridge? Derive the relation for the same? 07
 - b) What is freeboard? What are the essentials to provide the free board in all types of bridges? 08
- Q.4
- a) Discuss the criteria for site selection of airport & sketch general layout of airport. 07
 - b) Define cofferdam. State the requirement of a cofferdam. Explain any two types of cofferdam. 08
- Q.5 Write short note on (any three) 15
- a) Airport lighting & marking.
 - b) Wind rose diagram
 - c) IRC loading on bridges
 - d) Foundation for bridges
 - e) Cause way.

Section B

- Q.6 Explain the following terms [any five] 10
- a) Permanent way
 - b) Creep of rail
 - c) Dock and harbor
 - d) Signaling
 - e) Water column
 - f) Yard

- g) Points and crossing
h) Gradients
- Q.7 a) Write working procedure of absolute block system & following train system of signaling. 08
b) What is tilting of rail? Why it is being adopted. 07
- Q.8 a) What is creep of rail? What measures are commonly adopted to prevent creep? 07
b) Draw the cross sections of broad gauge track in embankment & cutting for single line & double line. 08
- Q.9 a) Differentiate between dry docks & wet docks and stations & yards. 08
b) What are acute & obtuse crossing. Describe both with neat sketch. 07
- Q.10 Write a short note on (any three) 15
a) Requirement of railway station
b) Coning of wheel
c) Classification of Dock & Harbor.
d) Fish- plate & fish-bolts.
e) Sleeper density

SUBJECT CODE NO:- P-128
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination May/June 2017
Theory of Structure - II
(Revised)

[Time: Three Hours]

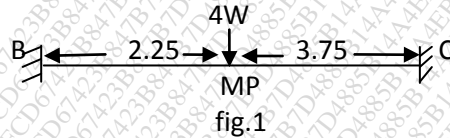
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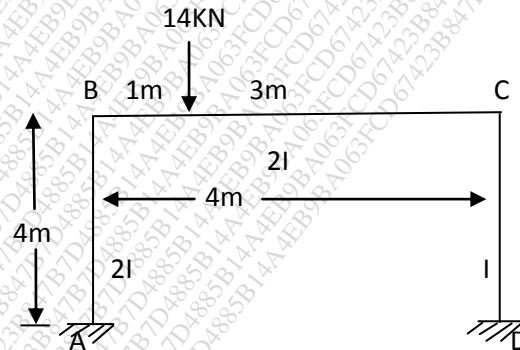
- N.B
- i. Question numbers one and six are compulsory
 - ii. Attempt any two questions from each section.
 - iii. Figures to the right indicate full marks.
 - iv. Assume suitable data if necessary.
 - v. Use of is 800 and steel table is permitted.

Section A

- | | | |
|-----|---|----|
| Q.1 | i. Explain load factor. | 02 |
| | ii. Find shape factor for circle of diameter D. | 02 |
| | iii. Explain Assumption is trusses. | 02 |
| | iv. State and explain General slope deflection equation | 04 |
| Q.2 | a) Find the value of w at collapse for the loaded shown in figure. 1. | 05 |



- | | | |
|-----|--|----|
| | b) Find the shape factor for triangle of base b and height h. | 05 |
| | c) State and explain upper bound and lower bound theorem. | 05 |
| Q.3 | A portal frame ABCD is fixed at A and D and has rigid joint at B and C is loaded as shown in fig2. Plot the Bending moment diagram for same. Use column Analogy method | 15 |



- | | | |
|-----|---|----|
| Q.4 | Analyze the portal frame shown in fig 3 by slope deflection method –plot BMD. | 15 |
|-----|---|----|

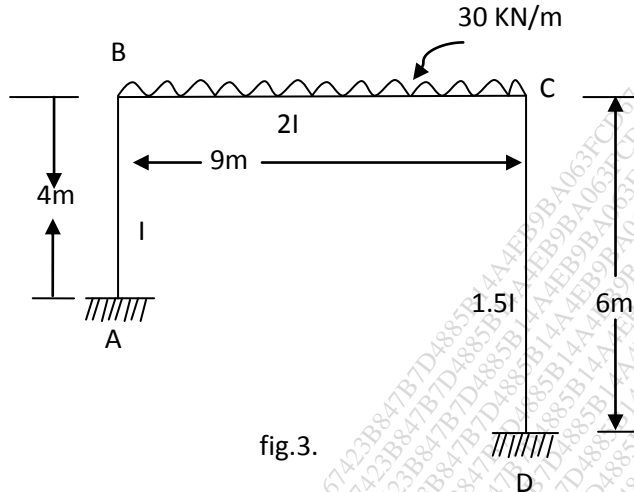


fig.3.

Q.5 In the plane braced frame shown in fig4 all the member have same cross sectional area at 800 mm^2 and are made of same material. The member AC in the frame was initially short by 2.5 mm -Determine forces in each member. 15

$E=2 \times 10^5 \text{ N/mm}^2$.

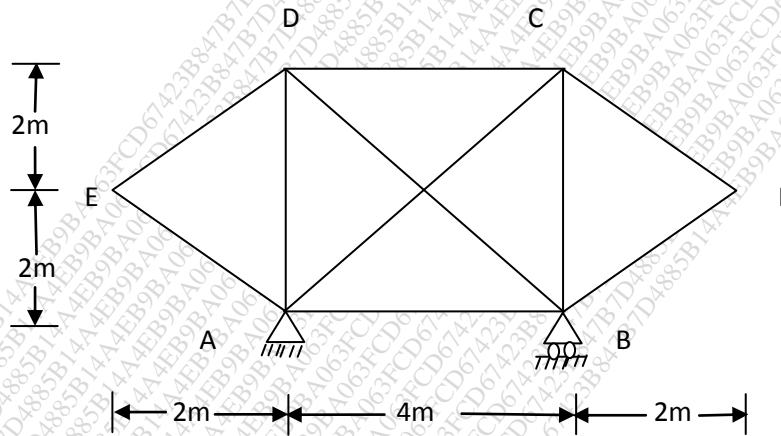


Fig.4

Section B

Q.6 i. Explain sway frame and Non-sway frame. 02
 ii. Explain Influence line diagram. 02
 iii. A two hinged parabolic arch of span L and central rise h is subjected to a temperature rise of t^0 . Derive an expression for horizontal thrust developed in the arch. 06

Q.7 Analyze the frame shown in fig.5 by moment distribution method and Draw BMD. 15

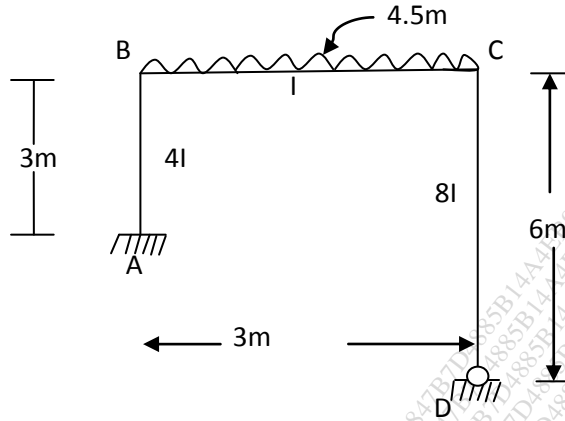


Fig.5

Q.8 Analyze the continuous beam shown in fig.6 by Kani's method and draw BMD.

15

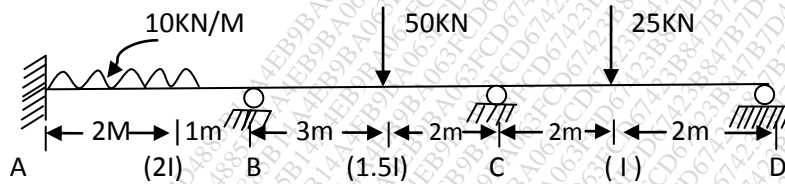


Fig. 6

Q.9 A two hinged parabolic arch of span 28m and central rise 4.5 m as shown in fig 7 Find horizontal thrust and radial shear at 10m from right support. $I=I\sec\theta$.

15

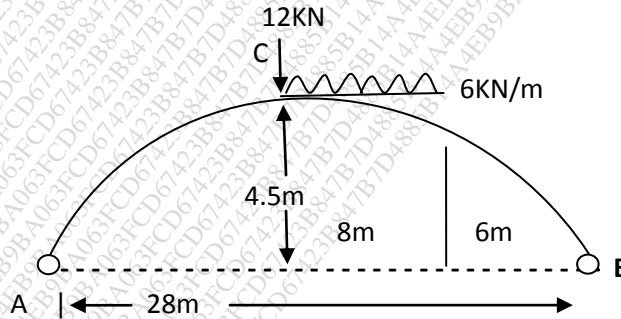


fig 7.

Q.10 a) Analyze the frame shown in fig 8 by moment Distribution method and plot BMD

08

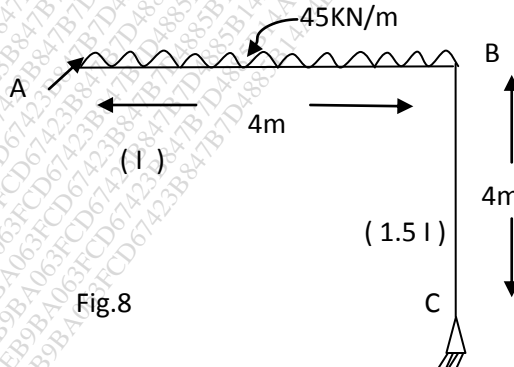


Fig.8

b) A two hinged parabolic arch of span 60m and central rise 6m is subjected to crown load of 40 KN .Find 07
horizontal thrust and draw BMD

SUBJECT CODE NO:- P-190
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination May/June 2017
Advanced Surveying
(Revised)

[Time: Two Hours]

[Max.Marks:40]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.5 is compulsory. And answer any two question from each section A and B apart from compulsory question
 - ii) Assume suitable data if necessary and state the same very clearly
 - iii) Figure to the right indicate full marks

Section A

- Q.1 Answer the following question (any three) 06
- 1) Scale and distortion of vertical photograph
 - 2) Define terrestrial photogrammetry?
 - 3) Explain shore line surveying ?
 - 4) Use of sounding rods / poles & lead lines
 - 5) Define : 1) datum scale & 2) average scale
- Q.2 Derive an expression for the total number of photographs required (N) to cover the area to be surveyed by considering longitudinal & side overlapping in the case of photogrammetry 07
- Q.3 What is sextant box explain the use of it in surveying? 07
- Q.4 Determine the RLs of the point A and B from the following data 07
- RL of point C= 352 m
 - RL of point D =416m
 - Parallax reading of point C=9.96MM
 - Parallax reading of point D= 10.56 mm
 - Parallax reading of point A= 11.54 mm
 - Parallax reading of point B= 8.86mm
 - Average base =96mm , focal length of camera =200mm

Section -B

- Q.5 Answer the following question (any three) 06
- 1) Write down Aims & objectives of RS?
 - 2) Write down main five component of GIS?
 - 3) What is land cover change detection means, What is its necessity in GIS?
 - 4) Give different applications of GIS
 - 5) Write down clearly difference between ARS and PRS?
- Q.6 How you will utilize the knowledge of GIS in order to survey some area of an engineering interest ? 07
- Q.7 Write down detailed notes on 'Application of RS in civil engineering surveys ? 07
- Q.8 Explain in detail the use of EME (electro –magnetic energy) and its use in Remote sensing Techniques ? 07

SUBJECT CODE NO:- P-210
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E. (CIVIL) Examination May/June 2017
Environmental Engineering - I
(Revised)

[Time:ThreeHours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Attempt any three questions from each section.
 Q.1 from section A and Q.6 from section B are compulsory.
 ii) Assume suitable data if necessary.
 iii) Draw neat and labelled diagram wherever necessary

Section A

- Q.1 Explain the source and classification of air pollutants. 10
- Q.2 a. Explain primary and secondary Air pollutants. 07
 b. Explain effect of air pollution on animals. 08
- Q.3 a. Describe the mechanism of ESP and its advantages and disadvantages. 07
 b. Write down air pollution law and ambient air quality std. 08
- Q.4 A) Determine stack height 08
 a. physical stack height =250mt tall with 1.2 mt inside dia.
 b. Wind velocity=3.0 mt/sec
 c. Air temp is 35^oc and Barometric pressure is1200 mili bars .
 d. Stack velocity =12m/s and stack gas temp. is 300^oc
 B) Describe the different methods of controlling air pollution. 07
- Q.5 Write short notes (any three) 15
 a. Acid Rain
 b. Photochemical air pollution
 c. Smog
 d. Green house Effect

Section B

- Q.6 a. what are the various type of water demand. Explain in detail 05
 b. State the factors that effects the rate of water demand 05
- Q.7 a. Explain Biological WQ parameter 07
 b. In continues flow setting tank 3.5m deep and 65m long, flow velocity of water is observed as 1.22 cm/sec. 08
 What size of particles of sp-gravity 2.65 may be effectively removed in the tank, if the kinematic viscosity of water is 0.01 cm²/sec.
- Q.8 a. Explain operating troubles in RSF 07
 b. Explain break point chlorination in detail 08
- Q.9 a. Define term 08
 1. Plain chlorination
 2. pre chlorination
 3. Post chlorination
 4. Super chlorination
 b. what are the different types of coagulants ?Explain any one. 07
- Q.10 Write short note (any three) 15
 1. Aeration
 2. Reservoir intake
 3. Fire demand
 4. pressure filter
 5. clarriflocculator

2017

SUBJECT CODE NO:- P-233
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E. (CIVIL) Examination May/June 2017
Design of Structures - II (RCC)
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q. No.1 and Q. No.6 are compulsory.
- ii) Attempt any two questions from remaining of each section.
- iii) Use IS 456-2000 is allowed.
- iv) Assume suitable data, if required and state it clearly.

Section A

- Q.1 a) What are the different types of limit states, on which basis they are classified. 03
b) Why is it undesirable to design over reinforced sections 03
c) What is redistribution of moments? State & explain IS code provision for the same 04
- Q.2 a) Explain on zoning in shear design 03
b) A.R.C. beam 250mm wide and 460mm deep is to be reinforced with 0.75% steel of grade Fe500 12
with an effective cover of 40mm. If concrete grade M20, what maximum percentage of redistribution of moments could be allowed and what is the ultimate moment of resistance of the section.
- Q.3 a) Explain in detail the causes of cracking in R.C.C. structures. Explain the bar detailing rules in detail. 03
b) A R.C.C. beam of rectangular section 230mm x 400mm with an effective cover is 35 mm. Find the 12
maximum imposed uniformity distributed load carrying capacity of beam if it is simply supported over a span of 3.2m. Use M20 grade of concrete & Fe415 grade of steel.
- Q.4 a) Give the detailed design procedure for doubly reinforced rectangular section. 05
b) A rectangular beam section of 230mm width and 460mm overall depth is reinforced on tension side 10
with 6 bards of 16mm diameter out of which 2 bars are bent at 45° at ¼. Determine the shear resistance of bent up bars and also additional shear reinforcement required if it is subjected to a shear force of 280 KN. Use M20 & Fe 415 grades
- Q.5 a) Derive the various design parameters (constants) for M25 and Fe 500 grade of concrete & steel 05
respectively
b) An isolated T beam having a span of 7m, width of flange = 90mm, thickness of flange = 110mm, 10
width of web=250mm, effective depth (d) = 530mm $A_{st} = 3700 \text{ mm}^2$. Use M20 & Fe 415 grades.
Determine the moment of resistance of the section.

Section B

- Q.6 a) Explain reinforcement detailing in earthquake resistance structure. 03
b) What is the main difference in terms of structural behavior between a short column & long column 03
c) Explain in detail the Pu-Mu interaction diagram 04
- Q.7 a) Derive the equation for ultimate capacity of an axially loaded short column 05
b) A rectangular column of section 300mm x 500mm is reinforced with 8 bars of 25mm ϕ . Determine 10
the load carrying capacity of column taking minimum eccentricity less than 0.05 times lateral dimensions. Take Fe 415 & M 20 grades.

- Q.8 Design a rectangular slab supported on its all the four edges over a hall of 5m x 6m. The slab is discontinuous of four sides & Take a live load of 4 KN/M² & Floor finish is 1 KN/m². Use M20 & Fe415 grades. Show the reinforcement details. 15
- Q.9 a) Explain the importance of ductility in seismic design. Also write the name of IS code available related to the earthquake 03
 b) Design a dog legged staircase of clear size 2m x 4m. The columns are of size 230mm x 380mm. Floor to floor height is 3m. Live load is 3.5 KN/m² & floor finish is 1 KN/m² use M20 and Fe 415 grades. 12
- Q.10 Design a rectangular footing of uniform thickness for an axially loaded column of 300 x 600mm loaded 1250 KN. Take a S.B.C. of soil is 200 KN/m². Use M20 grade of concrete and Fe 415 grade of steel. 15

SUBJECT CODE NO:- P-264
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination May/June 2017
Geotechnical Engineering
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Solve three questions from section A including Q.No.1 which is compulsory, from section B Solve three questions including Q.No.6 which is compulsory.
 - ii) Assume suitable data if necessary.
 - iii) Figure to the right indicates full marks.

Section A

- | | | |
|-----|---|----|
| Q.1 | a) Differentiate between compaction and consolidation. | 04 |
| | b) Sketch the plasticity chart. Explain its use in engineering classification of fine grained soils with reference to I.S classification of system. | 06 |
| | c) Explain the procedure of determination of specific gravity by pycnometer method. | 06 |
| Q.2 | a) Explain
1. honeycomb structure
2. flocculent structure | 06 |
| | b) Derive the equation for square root of time fitting method with a sketch. | 06 |
| Q.3 | a) Derive the expression for coefficient of permeability of coarse grained soils using constant head method. | 06 |
| | b) Write a note on field compaction methods. | 06 |
| Q.4 | a) Explain the graphical method of flow net construction. What are the properties of flow net? | 06 |
| | b) Explain highway research board classification of soils. | 06 |
| Q.5 | Write a short note on:
a. Effective and neutral pressure
b. Laboratory consolidation test.
c. Proctor needle method. | 12 |

Section B

- | | | |
|-----|---|----|
| Q.6 | a. Explain the stability of downstream slope of earthdam during steady seepage | 06 |
| | b. Explain the consolidation process with piston and spring analogy. | 06 |
| | c. What are the advantages of triaxial test? | 04 |
| Q.7 | a. Differentiate between finite and infinite slope. | 06 |
| | b. Explain direct shear test to find the shear strength parameter of the soil. | 06 |
| Q.8 | a. With usual notations for rare shear test, prove that
$\tau = \pi d^2 \rho g \left(\frac{H}{2} + \frac{d}{6} \right)$ | 06 |
| | b. Explain Swedish circle method. | 06 |

- Q.9 a. Explain stress isobars with the help of sketch. 06
b. Explain the procedure of determination of unconfined compressive strength of soil mass of clayey soil 06
- Q.10 Write short note on : 12
a. Taylors stability number
b. Active earth pressure
c. Mohr- coulomb failure theory.

SUBJECT CODE NO:- P-296
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E. (CIVIL) Examination May/June 2017
Water Resource Engineering - I
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Question No.1 & Q.No.6 are compulsory.
 - ii) Answer three questions from each section from remaining.
 - iii) Assume suitable data, if necessary.

Section A

- Q.1 Answer the following (any five) 10
- a) Enlist various practical applications of hydrology.
 - b) What are the use & limitations of unit hydrograph.
 - c) Define Pan coefficient C_p .
 - d) Enlist factors affecting precipitation.
 - e) Write empirical evaporation equations.
 - f) State factors that affect infiltration capacity.
 - g) Define Potential Evapotranspiration
 - h) Enlist various forms of precipitation.
- Q.2 Describe the different methods of recording of rainfall with neat sketches. 10
- Q.3 a) Describe commonly used evaporimeters with neat sketches. 06
- b) A Catchment area has seven raingauge stations. In a year the annual rainfall recorded by the gauges are as follows. 04

Station	P	Q	R	S	T	U	V
Rainfall (cm)	130	142.1	118.2	108.2	165.2	102.1	146.9

For a 5% errors in the estimations of the mean rainfall calculate the minimum number of additional stations required to be established in the catchment.

- Q.4 Using the 3-hour unit hydrograph below. Find the peak flow resulting from four successive 3 hour periods of rainfall producing 0.35, 0.87, 1.39 and 0.77 cm of runoff respectively from a basin. Neglect base flow. 10

Time (hr)	Flow(m^3/s)
0	0
1	16
2	58
3	173
4	337
5	440
6	400
7	285
8	215
9	165

10	122
11	90
12	60
13	35
14	16
15	0

- Q.5 Write short notes on (any two) 10
- Gumbel's distribution
 - Method of stream flow measurement
 - Supplementing the missing rainfall data
 - S-curve method.

Section B

- Q.6 Answer the following (any five) 10
- What are the different types of irrigation efficiency.
 - A crop requires a total depth of 84 cm of water for a base period of 100 days. Find the duty of water.
 - Define storage coefficient.
 - Define term well loss.
 - Enlist advantages of crop rotation.
 - Find the delta for a crop if the duty for a base period of 90 days is 1250 hectares/cumec.
 - Distinguish between Aquifer and aquitard
 - Define Permanent Wilting Point.
- Q.7 Derive the basic differential equation of steady ground. Water flow in a confined aquifer. State clearly the assumptions involved. 10
- Q.8 A loam soil has field capacity of 22% and wilting coefficient of 10%. The dry unit weight of soil is 15KN/m³. If the root zone depth is 70cm determine the storage capacity of the soil. Irrigation water is applied when moisture content falls to 14%. If water application efficiency is 75% determine the water depth required to be applied in the field. 10
- Q.9 Explain with neat sketches different water-shed structures in drainage line treatment. 10
- Q.10 Write short note on (any two) 10
- Steps involved in watershed management.
 - Non consumptive use of water
 - Methods of applying water to crop
 - Groundwater estimation

Subject Code : 361

FACULTY OF ENGINEERING & TECHNOLOGY
T.E. (Civil) (Revised) Examination
APRIL/MAY, 2017

Transportation Engineering – II

Time : Three Hours

Max. Marks: 80

“Please check whether you have got the right the question paper”

- Note:
- Question No. 1 & 6 are compulsory.
 - Solve any two questions from remaining of each section.
 - Figures to the right indicate full marks.

SECTION – A

- Q.1 Calculate stopping sight distance for vehicle running at speed 80 kmph. Use longitudinal coefficient of friction as 0.35 and reaction time of driver as 2.5 sec. 10
- Q.2 (a) Explain various stages of engineering surveys for locating a new highway. 08
(b) Explain the classification of urban roads. 07
- Q.3 The speed of overtaking and overtaken vehicles are 76 kmph and 60 kmph respectively on two way road. The average acceleration during overtaking may be 0.99 m/sec^2 . 15
(a) Calculate safe overtaking sight distance.
(b) Mention minimum length of overtaking zone.
(c) Draw a neat sketch of overtaking zone and show positions of sign posts.
Assume suitable data.
- Q.4 (a) What is superelevation? Derive the expression for superelevation. 08
(b) Explain briefly the modified classification of road system in India as per third twenty year road development plan. 07
- Q.5 Enlist various tests conducted on bitumen. Explain any two in detail. 15

SECTION – B

- Q.6 Discuss in detail various factors affecting pavement design. 10
- Q.7 (a) Compute the equivalent radius of resisting section of 25 cm slab, given that the radius of contact area wheel load is 15cm. 08
(b) Explain the procedure for patch repair work in bituminous pavement. 07
- Q.8 (a) What are the objects and scope of traffic engineering? Explain briefly. 08
(b) What are general causes of pavement failure. 07
- Q.9 (a) Explain group index method of pavement design. What are limitations of this method. 08
(b) Explain flexible and rigid pavements and bring out the points of difference. 07
- Q.10 (a) Explain different types of joints in rigid pavement. 08
(b) Discuss mechanistic. Empirical design in detail. 07

P – 2017