SUBJECT CODE NO: E-05
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination Nov/Dec 2017
Environmental Engineering - I
(REVISED)

[Time: Three Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
1) Attempt <u>any three</u> questions from each section.
2) Q.1 from section A & Q.6 from section B are compulsory.
3) Assume suitable data if necessary.
4) Draw neat & labeled diagram wherever necessary.

Section A

Q.1 a) What is photochemical smog? & how it is formed?   05
b) Explain the function of control board to control air pollution.   05

Q.2 a) Distinguish between   08
   i)   Primary & secondary air pollutants.
   ii)   Stationary & mobile sources of air pollutant.
b) A coal fired thermal power plant burns 6.25 tonnes of coal per hour & discharge the   07
combustion products through a stack having an effective height of 80m the coal has a
sulphur content of 4.7% & wind velocity at the top of stack is 8.0 m/s. Atmospheric
condition are moderately to slightly unstable. Determine the maximum ground level of
conc.SO_2 & the distance from stack at which max occurs.

Q.3 a) What are the advantages & disadvantages of ESP?   07
b) Enlist various equipment used for control of suspended particulate matter. Draw neat sketch 08
of any one in detail.

Q.4 a) What is air prevention & pollution control act – 1981?   05
b) State the effect of smoke on   05
   i)   Public health
   ii)   Property
c) With a neat sketch explain the principle, working of a cyclone separator.   05

Q.5 Write short note on (<u>any 3</u>)   15
   a) Ozone depletion
   b) Effect of air pollution on human health
   c) Gaussian Dispersion model
   d) Aerosoles
   e) Spray towers

2017

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Section B

Q.6   a) Explain rectangular sedimentation tank with neat sketch with respect to its working.   05
        b) What is a 'river intake'? What are the factors which govern the location of intake structure? 05

Q.7   a) Discuss the physical, chemical & biological characteristics of water.   08
        b) 2 million litres of water per day is passing through sedimentation tank which is 8m wide,   07
             15m long & having a water depth 3m.
              a. Find the detention period of the tank.
              b. What is average flow velocity through the tank?
              c. If 60 ppm is the concentration of suspended solids present in turbid water, how much
                 dry solids will be deposited per day in the tank. Assuming 70% removal in the basin &
                 average specific gravity of deposit as 2.
              d. Compute the overflow rate.

Q.8   a) Enlist & explain minor methods of Disinfection.   07
        b) Enlist type of filter & describe slow sand filter in detail.   07

Q.9   a) Discuss the relative merits of rapid Gravity filters.   07
        b) Design a rapid sand filter unit for 4 MLD of supply with all principle content.   08

Q.10   Write short note on (<u>any 3</u>)   15
        a) Groundwater recharge
        b) Pressure filter
        c) Aeration
        d) Filter material
        e) Population forecasting

2017

SUBJECT CODE NO:- E-28
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination Nov/Dec 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   1. Q.No.1 and Q.No.6 are compulsory. Answer any two from Section A & Section B.
2. Assume suitable data if necessary.
3. Figures to right indicate the maximum marks.
4. Use of non-programmable calculator is allowed.
5. Use of IS: 456-2000 is permitted.

Section- A

Q.1   a) What are the advantages and disadvantages of Providing Large Clear cover to   03
Reinforcement in Flexural Member.
b) Enumerate the different types of Limit State with Brief Description.   04
c) Why is the Provision of Minimum Reinforcement in Reinforced Concrete Beam?   03

Q.2   Design Simply Supported beam of span 5M. is to carry A Uniform Dead Load of 20 KN/M. and   15
Uniform Live Load of 30KN/M. the width of the support is 230mm. assume M-25 Concrete and
Fe-415 steel.

Q.3   Design Cantilever beam of span 3-0 Mt. is to carry A Uniformly Distributed Load of 20 KN/M. the   15
width of the support is 230 mm. assume M-25 Concrete and Fe-500. Show the curtailment of
reinforcement.

Q.4   a) What is mean by cracking? Explain the types of cracks.   03
b) A rectangular beam of span 6M c/c resting on 300 mm wide simple supports is to carry a   12
Superimposed load of 35 KN/M. design the Beam it is Restricted to 450 MM.
Use M20 and Fe 415 Grade.

Q.5   An Isolated Simply supported T-Beam has flange width 2300 MM and Flange thickness of 120   15
MM, the effective span of the beam is 3.5 Meter. The effective depth of the Beam is 580 MM and
width 300MM. The Beam having the Reinforcement with 8-20 MM Tor Use M20 and Fe 415
Grade Determine the Moment of Resistance of the section.

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Section- B

Q.6   Explain the following terms.   10
   a) Development length and necessity of the check.
   b) Necessity of torsion reinforcement in the slab.
   c) Relationship for the load carrying capacity of an axially loaded short column.
   d) One-way slab and two-way slab.

Q.7   Design a reinforced concrete slab for a room 4.2M × 6.0M supported on a beam of width 250MM.   15
       the slab is continuous over right support and down ward direction in plan, carrying a live load of
       $3KN/M^2$ & floor finish 1.0 KN/M^2. Assume M-25 grade concrete & Fe-415 grade steel.

Q.8   Design a dog legged stair case for a residential building having a room size 5m × 2.5M. Floor to   15
       floor height is 3M. The column size 230MM × 380MM located at four corners take live load
       $3KN/M^2$ & floor finish load 0.9 KN/M^2. Use M20 and Fe-415 grades.

Q.9   Design isolated footing for rectangular column 230mm × 600mm reinforced with 8 bars of 25 mm 15
       diameter. And carrying axial load of 1200 KN, SBC of soil is 250 KN/M^2 at a depth of 2.0 m below
       ground level. Assume M-25 grade of concrete & Fe-415 grade of steel.
       Show the reinforcement in details.

Q.10   Design a rectangular column subjected to ultimate load of 2500KN. The column is 4.0M long &   15
       effectively held in position at both ends but not restrained against rotation.
       Take M-20 & Fe-500 grades.

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SUBJECT CODE NO:- E-59
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination Nov/Dec 2017
Geotechnical Engineering
(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 solve any two from each section from remaining
2) Assume suitable data if required state it clearly
.

Section A

Q.1 a) Define coefficient of curvature & coefficient of uniformity   10
b) What is zero air void line?
c) Enlist different modes of soil water
d) Enlist the names of three important clay mineral
e) State Darcy's law
f) Define soil thixotropy
g) Define effective pressure
h) What is discharge velocity & seepage velocity

Q.2   a) The following data refer to a sample of soil   08
   • Percent passing 4.75mm IS sieve = 64
   • Percent passing 75 μ IS sieve = 6
   • Coefficient of curvature = 2.7 coefficient of uniformity = 7.5
   • Plasticity index = 2.5%
   Classify the soil as per IS classification
b) Derive the formula to compute the height of capillary rise in soil   07

Q.3   a) Determine the average horizontal & vertical permeability coefficients of a soil deposit   07
made up of three horizontal strata each 1m thick if the coefficient of permeability are
1×10^{-1}mm/s , 3×10^{-2}mm/s & 8×10^{-3}mm/s respectively for the three layers
b) Write a short note on the corrections to be applied to hydrometer testing   08

Q.4   a) Derive the relationship between bulk unit weight of a soil, specific gravity & degree of   08
saturation
b) Explain step wise procedure to determine field density of loose soil strata with neat sketch 07

Q.5   a) Explain graphical method to construct flow net & its application to isotropic soil   07

        b) What are the Atterberg limits? Explain plasticity limit why plasticity index for sandy soil   08
            is zero?

<center>OR</center>

Write shorts notes (any three)
        a) Assumptions made in Terzaghi's theory?   15
        b) Differentiate between standard proctor test & modified proctor test
        c) Explain five factors affecting the compactor
        d) How compaction of soil is controlled in field?
        e) IS classification

<center>**Section – B**</center>

Q.6   Attempt any three   10
        a) What are advantages of triaxial test.
        b) Explain earth pressure on retaining wall
        c) A soil sample has voids ratio 0.5 find porosity
        d) What should be the value of surcharge intensity to have zero active pressure intensity at
            the tip of wall in cohesive soil
        e) The void ratio & specific gravity of a soil are 0.65 & 2.72 respectively find the degree of
            saturation in percent corresponding to water content of 20%
        f) Which test should be conducted? for a saturated cohesive soil if a triaxial shear test yields
            the angle of internal friction $\Phi = 0$ (zero)

Q.7   a) In an unconsolidated undrain triaxial test, it is observed that an increase in cell pressure 08
            from 150KPa to 250KPa loads to a pore pressure increase of 80KPa it is further observed
            that an increase of 50KPa in deviatoric stress results in an increase of 25KPa in the pore
            pressure find the value of skemptions pore pressure parameter
        b) Explain new marks influence chart preparation & usage   07

Q.8   a) Explain shear characteristics of sand   07
        b) In an uncontained compression test, a sample of sandy clay 8cm long & 4cm in diameter 08
            fails under a load of 120N at 10% strain compute the shearing resistance taking into
            account the effect of change in cross section of sample

Q.9   a) Show graphical representation or graph between C & Φ for   07
            1) Sandy soil
            2) Clayey soil
            3) Moist sand

        b) Under what circumstances following shear tests use? Specify reasons   08
            1) Shear box
            2) Vane shear test
            3) Unconfined compression test

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Q.10   Attempt any three   15
        a) Explain plastic equilibrium in soils
        b) Differentiate between coulomb's theories & Rankine's theory
        c) What are the factors affecting the stability of soil
        d) Discuss graphical method for active earth pressure
        e) Differentiate finite & infinite slope

[Time: Three Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
- i.   Question no.1 and question no.6 are compulsory.
- ii. Attempt any two questions from remaining questions from each section.
- iii. Figures to right indicate the maximum marks.
- iv. Assume suitable data, if necessary.

SECTION-A

Q.1   **Attempt any FIVE:**   **10**
- **a)** Enlist various practical applications of hydrology.
- **b)** Define total runoff.
- **c)** Draw a typical mass curve of rainfall obtained from recording type of rain-gauge.
- **d)** Define Depth Area Duration (DAD) curve, what is its use?
- **e)** Enlist the factors affecting evaporation.
- **f)** Define potential evapo-transpiration (PET)
- **g)** Enlist the factors affecting runoff.
- **h)** What is current meter? What are the uses of current meter?

Q.2   **a)** Explain with neat sketch tipping bucket type rain-gauge.   **07**

b) A Catchment area has seven rain-gauge stations. In a year the annual rainfall recorded by   **08**
the gauges are as follows.

Station	A	B	C	D	E	F	G
Rainfall(cm)	142.3	148.6	120.2	145.1	165.5	133.8	155.9

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.3   **a)** The ordinates of a 4h U.H of a basin of area 350km^2 measured at 1h intervals are 8, 22, 46,   **08**
80, 110, 90, 85, 67, 52, 42, 38, 30, 28, 21, 15, 7, 5, 3 and 1.0m^3/s respectively. Obtain the
ordinates of a 3h U.H for the basin using S-curve technique.

b) Explain with neat sketch different methods of base flow separation.   **07**

Q.4   **a)** What do you understand by a crest gauge? Explain the principle and working of any one   **08**
type of crest gauge.

b) Explain with neat sketch ISI standard evaporation pan.   **07**

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Q.5 **Write a short note on (any three):** **15**
    a) Double mass curve analysis
    b) Infiltration measurement indices
    c) Unit hydrograph derivation
    d) Log Pearson type III distribution

SECTION-B

Q.6 **Attempt any FIVE.** **10**
    a) Define storage coefficient.
    b) Define term specific yield
    c) Define Aquifer and aqui-clude.
    d) Enlist advantages of crop rotation.
    e) Enlist various methods of surface irrigation.
    f) Define 'permanent wilting point'
    g) Give the advantages of drip irrigation.
    h) Explain with neat sketch earthen gully plugging.

Q.7 **a)** Derive an equation for steady flow in a well in a confined aquifer. **08**

    b) A 0.4 m diameter well fully penetrates an aquifer of unconfined type whose bottom is 80 m **07** below the watershed ground water table. When pumped at a steady rate of $1.4 m^3$/min, the drawdown observed in two observation wells at radial distance of 5m and 15m are, respectively 4m and 2m. Determine the drawdown in the well.

Q.8 **a)** Explain the terms of delta, duty and base period and derive a relationship between them. **08**

    b) The gross command area for an irrigation canal is 20,000 ha, out of which 65% for Rabi **07** and 20% for rice. If kor period is 3 weeks for Rabi and 2.5 weeks for rice, determine the outlet discharge. The duty of water on the field for Rabi and rice may be assumed as 1550 hectares/cumec and 700 hect./cumec. Also calculate delta for each case.

Q.9 **a)** What is the necessity of watershed development? Explain conservation of soil and **08** conservation of water.

    b) How the drainage of irrigated areas is done for water logged areas. **07**

Q.10 **Write a short note on (any three):** **15**
    a) Different methods of ground water recharge
    b) Methods of improving duty
    c) Various structures to minimize soil erosion
    d) Constant level pumping test

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SUBJECT CODE NO: E-185
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination Nov/Dec 2017
Design of Structure - I (Steel)
(REVISED)

[Time: 3:00 Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
i) Solve any two questions from question no. 2 to 5 and any two from question no. 7 to 10.
ii) Questions no. 1 and question no. 6 are compulsory
iii) Assume suitable data if necessary and mention it clearly.
iv) Use IS 800: 2007; steel Table and Non – programmable Calculator is allowed.
v) Figures to right indicate the maximum marks.

SECTION - A

Q.1   Answer the following questions (Any five)   10
a) Explain common shapes of compression member?
b) Explain tacking rivets?
c) What are the advantages of welded connection?
d) Draw the sketches of block shear failure?
e) What are the different methods of design?
f) Explain tracking bolts?
g) Explain with sketches the pitch, gauge distance & edge distance?

Q.2   a) Design connections for members of roof truss, with gusset plate 12 mm thk, as shown in the   08
fig.1 using 16 mm dia. Bolt of grade 4.6.

b) Design connection for members of roof truss, with gusset plate 12 mm thk, as shown in fig. 1. 07
Use welded connections. Assume ultimate of steel 400 MPa and shop welded.
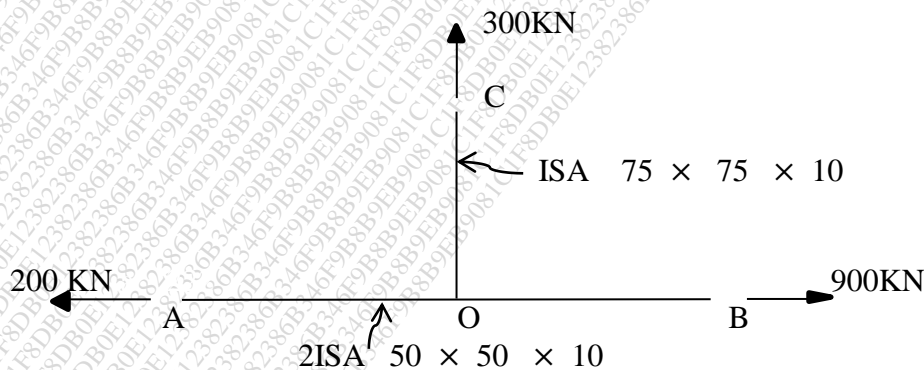

Fig No.1

Q.3   A single unequal angle 150x 115x 12 mm is connected to a 14 mm thick gusset plate at the ends with 15
5 nos. of 20 mm dia. Bolts to transfer tension. Determine the tensile strength of the angle if gusset is
connected to the 150 mm leg. Use the ultimate & yield strength of steel are 450 & 250 MPa.
[Take, e = 40 mm, & p = 60 mm.]

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Q.4   a) Explain laced column & battened columns?   08

        b) A compression member is made up of ISHB 300 @ 577 N/m, if length of column is 5m long   07
           and has pinned at both ends. Determine the maximum load carrying capacity?
           [Use, $fy = 250$ MPa & $fu = 400$MPa]

Q.5   Write short notes on (Any Three)   15
       a) Advantages of steel structures.
       b) Differentiate working stress method and limit state method.
       c) Classification of cross sections of steel structures.
       d) Gusset plate.

SECTION – B

Q.6   Answer the following questions (any five)   10
       a) Explain failure modes of beams?
       b) What are the various sections of plate girder?
       c) State the different types of loads acting on roof truss?
       d) Draw a sketch of grillage foundation
       e) Explain bracing system?
       f) Explain local bucking of flanges?
       g) What is the gantry girder?

Q.7   a) Explain the design procedure of laterally unsupported beam.   05

        b) A simply supported beam has of 6m laterally supported and it carriers a udl of 50 kN/m and   10
           point load 40kN at its center. Design the cross section and check for shear & deflection.

Q.8   A plate girder is simply supported over an effective span of 30m. It carries a udl of 30KN/m in   15
      addition to its self-weight and two point load of 200KN each at 10m from their supports. It is fully
      restrained at both ends against lateral bulking throughout the span. Take $fy = 250$MPa. Design
      welded plate girder.

Q.9   A 50 kN hand- operated crane is provided and has following data: 15
       1) Center to center distance of the gantry beam = 20m
       2) Span of gantry = 7.0m
       3) Weight of the crane = 50 KN
       4) Spacing of wheel = 3m
       5) Weight of the crab = 12KN
       6) Minimum hook approach = 1m
          Design a simply supported gantry girder assuming lateral supported to it.

Q.10   Write short note on (Any Three)   15
       a) Explain combined bending and shear in beam.
       b) Explain in detail dead load and live load on trusses.
       c) Differentiate between slab base and gusseted base.
       d) Draw the sketches of various trusses and state suitability for spans.

2017

SUBJECT CODE NO: E-251
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination Nov/Dec 2017
Building Planning & Design
(REVISED)

[Time: 3 Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B   i.   Question no. 1 and question no. 6 are compulsory.
          ii.   Solve any two questions from question no. 2 to 5 and any one from question no.7 to 8.
          iii.   Figures to right indicate the maximum marks.

SECTION- A

Q.1   Attempt any FIVE.   10

        a) Enlist the different types of architectural composition.
        b) Define circulation. How it is achieved.
        c) Define FAR. How the different road width affects the maximum permissible limits of FAR.
        d) Differentiate between detached house and semi-detached house.
        e) What are the thumb rules for selecting the rise and tread?
        f) Draw a net sketch of Nahani trap.
        g) Enlist the different types of buildings.

Q.2   a) Enlist the different principles of architectural composition and explain Contrast and   07
           Rhythm.
        b) Explain in detail different climatic zones of India.   08

Q.3   a) What are the objectives of building byelaws?   08
        b) Explain in detail factors affecting the selection of site for residential building.   07

Q.4   a) Explain with neat sketch how to prepare a plan.   08
        b) Explain in detail testing of drains and maintenance of drains.   07

Q.5   Write a short note on (any three):   15
        a) Sun shading devices
        b) Byelaws for height limitation
        c) Privacy as a principle of building planning
        d) Drafting material and its utilization

SECTION-B

Q.6 Plan and design a residential building for a family in new Aurangabad town using the following data.

        i)plot size 12m × 17m
        ii) Scale 1:50
        iii) plinth height 0.6m
        iv) Required components: Ent Verandah, Living Room, Bedroom, master bed, separate
        W.C, bath, kitchen –cum-dining room and stair case- doglegged. Draw:

        a) Working plan   05
        b) Locate the position of columns in plan   03
        c) Elevation   04
        d) Section through staircase   06
        e) Schedule of opening   03
        f) Area statement (block plan calculations)   04

Q.7 By assuming suitable data and standard norms list-out the requirement and draw a line plan of   15
Primary school building for 320 no. Of students.

Q.8   a) Explain with neat sketch two point perspectives.   08
            b) Write a short note on materials used in landscape design.   07

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Total No. of Printed Pages:3

SUBJECT CODE NO:- E-292
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination Nov/Dec 2017
Transportation Engineering-I
(REVISED)

[Time: Three Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.
N.B   i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
               ii) Attempt any two questions from the remaining questions in each section
               iii) Figures to the right indicate full marks.
               iv) Assume suitable data of required.
                                        Section A

Q.1   Solve any five.   10

       a) Airport Engineering

       b) Define runway

       c) Define Deck bridge

       d) Viaduct

       e) Linear waterway

       f) Define Scoring

       g) What is mean by free board?

       h) Bridge Alignment.

Q.2 a) What is economic span for a bridge? Derive the relation for the economic span for a bridge.   08

     b) State and explain any two empirical method for flood estimation in India.   07

Q.3 a) Describe with neat sketches the various types of wing walls with their advantages and disadvantages. 08

     b) What is coffer dam? Where it is used? Explain with sketch the construction of any coffer-dam used   07
        in shallow water.

Q.4 a) Explain in detail the procedure for orienting the runway.   08

     b) Discuss in brief the relationship between Aircraft and Airport.   07

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Q.5   Write Short notes on (Any Three)   15

        a) IRC Loading on bridges.

        b) Bridge Foundation

        c) Airport Lighting & Marketing

        d) Wind Rose Diagram

        e)   Bridge Approaches.

                                    Section – B

Q.6   Solve Any five.   10

        a) Define Dock & Harbour.

        b) Define interlocking

        c) Define Buckling of Rail.

        d) Define yard

        e) Define water column

        f) Define turn table

        g) Packing of Ballast

        h) Turn-out.

Q.7   a) What is the necessity of geometric design of railway track? Enumerate the significant features of   08
         design of a railway track.

       b) Draw the cross section of broad gauge track in embankment and in cutting for a single lane.   07

Q.8   a) Differentiate between natural and artificial harbours. Draw the neat sketch of typical artificial   08
         harbours.

       b) State the site selection criteria for docks and Harbours.   07

Q.9   a) What are the functions of railway sleepers? Explain any one type with neat sketches.   07

       b) What is station yard? What are the different types of yards? Describe any one in detail.   08

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Q.10   Write short notes on (Any Three)   15

      a)   Creep and its effect

      b)   Modern trends in railway

      c)   Characteristics of good ballast

      d)   Spikes.

      e)   Coning of wheel.

2017

SUBJECT CODE NO: E-335
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination Nov/Dec 2017
**Theory of Structure - II**
(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. Attempt any two from Section A and Section B.
ii. Assume suitable data if necessary state it clearly.
iii. Figures to the right indicate the maximum marks.
iv. Use of non-programmable calculator is allowed.

SECTION-A

Q.1
a) State and explain upper and lower bound theorem. 04
b) Explain plastic modulus. 03
c) Explain collapse load. 03

Q.2 Analyse the frame as shown below by column analogy method and draw bending moment diagram. 15

2017
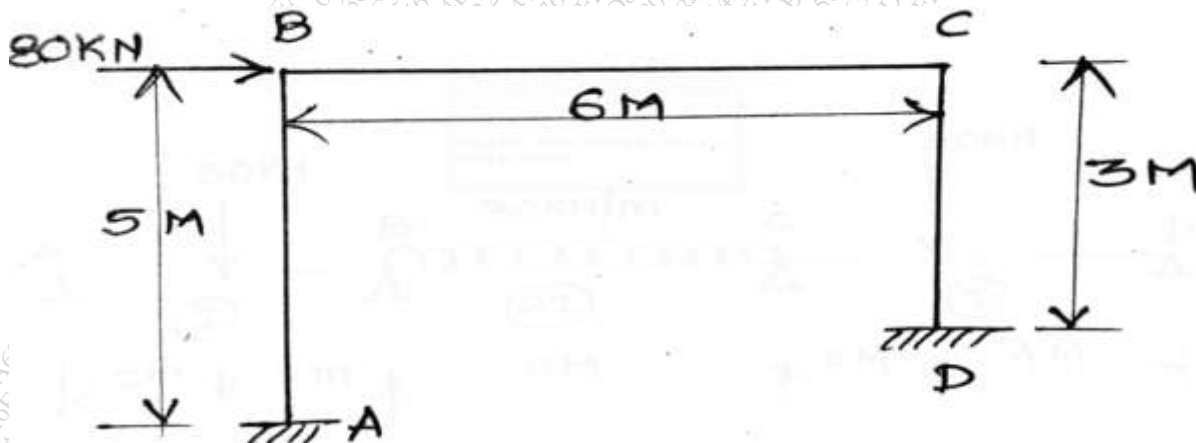
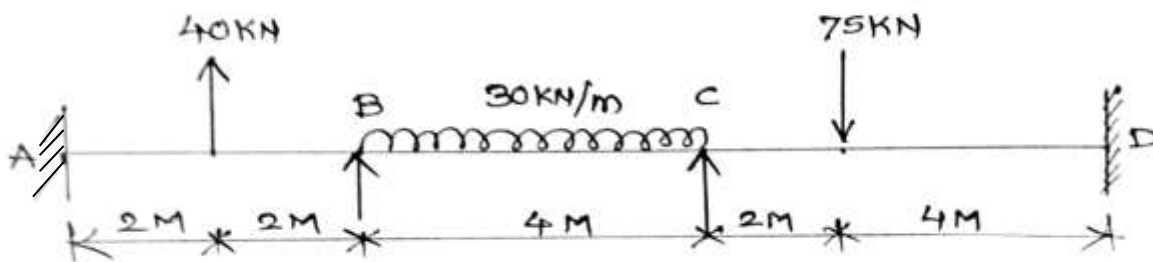Q.3   Analyse the beam shown in fig. below by using slope deflection method draw BMD & SFD.   15
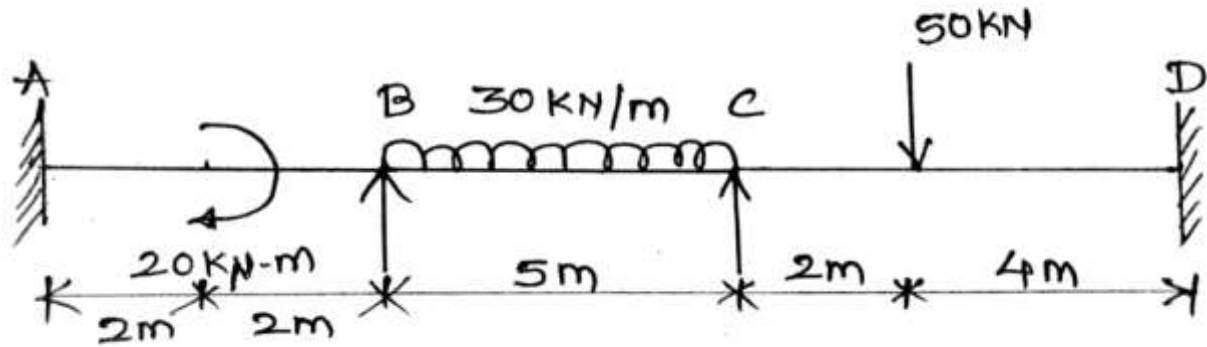
Q.4   A pin jointed truss as shown in fig. find the forces in the members. Cross sectional area is   15
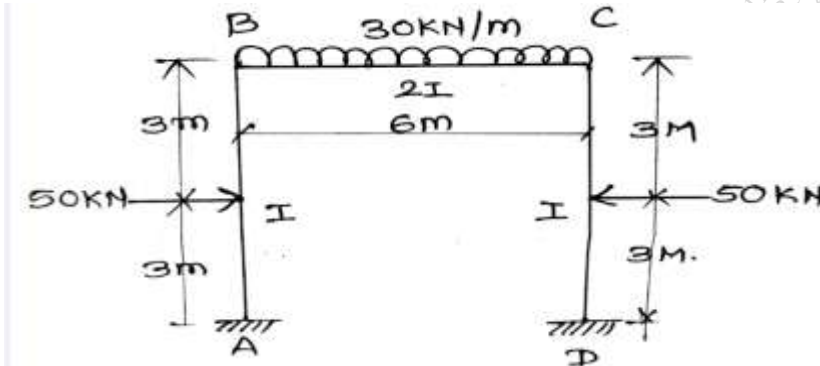   1000MM^2, take E=2x10^5 MPa.
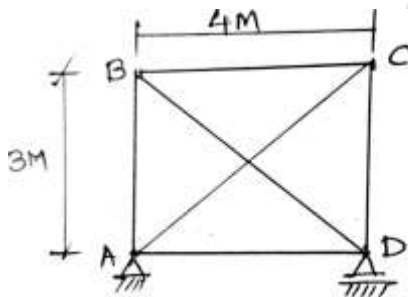
Q.5   Draw SFD, BMD for the beam shown in fig below by using SLOPE DEFLECTION METHOD. If   15
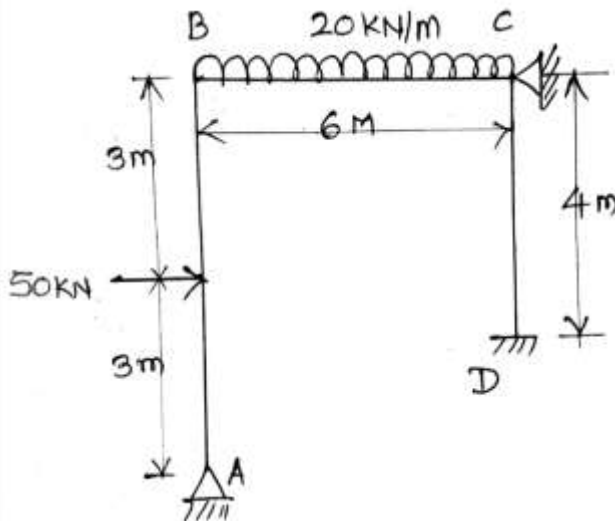   support B sinks by 2.50 mm. take I=3.5 x 10^7 mm^4 , E = 200 KN/M^2

Q.6   Find the end moments of the members of the portal frame as shown in fig by using MOMENT   10
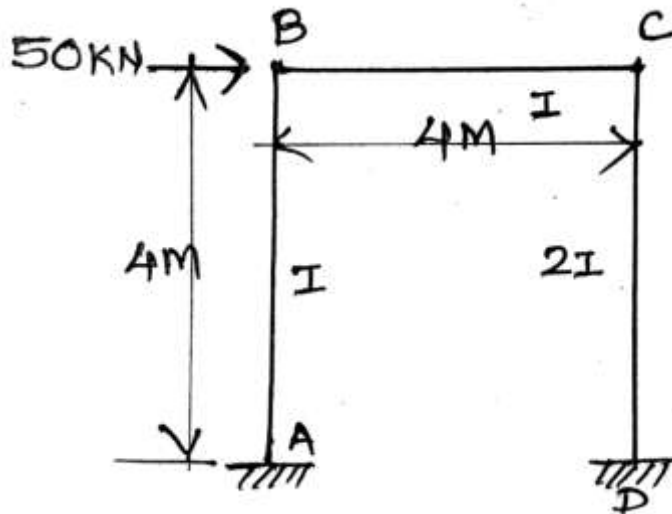   DISTRIBUTION METHOD.

Q.7   Find the end moments of the members of the portal frame as shown in fig by using MOMENT   15
       DISTRIBUTION METHOD.

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Q.8　　　Analyse the portal frame as shown in fig. by using KANI'S METHOD.　　　　15
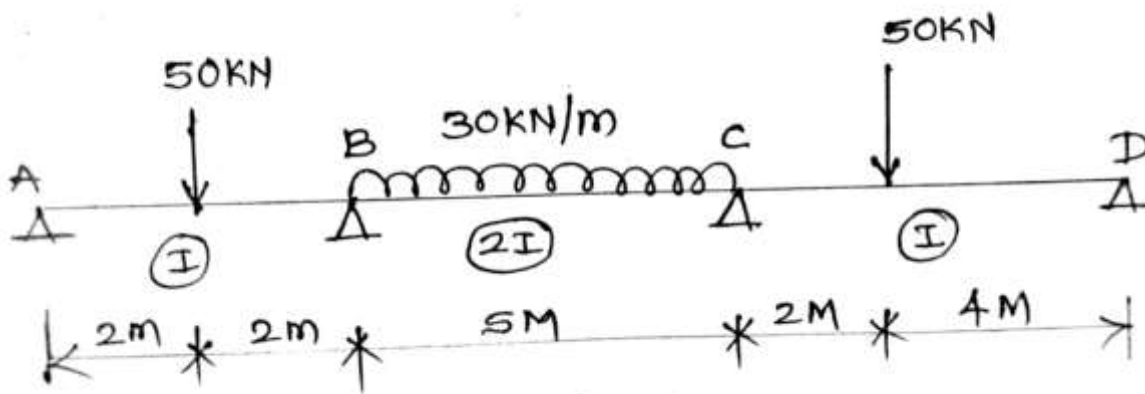

Q.9　　　Two hinged parabolic arch of span 18M and rise 3.60M. Carries two concentrated loads of 30 KN　15
　　　　each at crown and left quarter span. Find the horizontal thrust & BMD.

Q.10　　Analyse the continuous beam and draw BMD.　　　　15

SUBJECT CODE NO: E – 413
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(Civil) Examination Nov/Dec 2017
Advanced Surveying
(REVISED)

[Time: Two Hours] **[Max.Marks:40]**

Please check whether you have got the right question paper.

N.B
  i.   <u>Q. No. 1 and Q. No. 5 are compulsory</u>.
  ii. Answer <u>any two</u> questions <u>from section A and section B.</u>
  iii. Figures to right indicate the maximum marks.
  iv. Assume suitable data if necessary, and state the same very clearly.

Section A

Q.1 Answer the following questions <u>(any three)</u>   06
  a) Define Hydrographic surveying.
  b) Scale and distortion of the vertical photograph?
  c) Explain:- Drift and Crab
  d) Define
     i)   Datum scale
     ii) Average scale.
  e) Define terrestrial photogrammetry?

Q.2 What are sounding? Discuss various method of taking sounding?   07

Q.3 What is sextant box explains the use of it in surveying?   07

Q.4 Two point A and B having elevation of 700m and 350m respectively, above datum, appear on a   07
vertical photograph obtained with a camera of focal length of 300m and flying altitude of 2700m
above datum. Their correlated photographic coordinates are as follows.

Point	Photographic Coordinates	
	x(cm)	y(cm)
a	+3.65	+2.59
b	-2.26	+5.59

Determine the of the ground line AB.

Section B

Q.5 Answer the following questions (<u>any three</u>)   06
- a) What do you understand by electromagnetic spectrum?
- b) Define
  - i) Nadir point
  - ii) Oblique Photograph
- c) Differentiate between passive remote sensing and active remote sensing.
- d) Write down main five components of GIS.
- e) Elaborate the four M's for which geographical information is used.

Q.6 Define and explain photo- interpretation. State and discuss briefly the factors that aid in   07
photo –interpretation.

Q.7 Write a detailed note on application of remote sensing.   07

Q.8 Explain various types of data structures used in GIS.   07

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Total No. of Printed Pages:2

FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(CIVIL) Examination Nov/Dec 2017
Transportation Engg.- II
(REVISED)

[Time: Three Hours]   **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B   i.   Figures to the right indicate full marks.
                       ii.   Q.No.1 & 6 are compulsory.
                      iii.   Solve any two questions from the remaining of each section.

Section A

Q.1   Briefly outline the historical development of road construction.   10

Q.2   a) Why the extra widening is necessary on horizontal curves.   07
          b) What are desirable properties of bitumen? Explain penetration test in detail.   08

Q.3   The speed of overtaking and overtaken vehicles are 85 kmph and 70 kmph respectively. The   15
acceleration of overtaking vehicle is $0.92 m/s^2$. Spacing between the vehicles is 16m; reaction time of
driver is 2 sec. calculate safe OSD for 2 lane road.
Case I- on one way traffic road.
Case II- on two way traffic road.
Case III- on two way traffic 4 lane divided national highway.

Q.4   a) Discuss the various types of surveys carried out while designing highways.   07

          b) Calculate the stopping sight distance (SSD) of vehicle running at 60 kmph. Use longitudinal   08
             coefficient of friction as 0.36 and reaction time 2.5 sec

Q.5   a) Discuss the role of IRC in enhancing the highway development in India.   08
          b) Explain the classification of roads.   07

Section B

Q.6   Explain CBR method of flexible pavement design with neat sketch.   10

Q.7   a) Explain various causes of pavement failure.   07

          b) Compute the equivalent radius of resisting section of 25cm slab, given that radius of contact   08
             area of wheel load is 15 cm.

Q.8   a) Explain the construction procedure of WBM along with material specifications.   07
          b) Explain the term traffic volume. What are the objectives of carrying out traffic volume study?   08

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Q.9   a) Enlist different earth moving equipment's. Explain any one in detail.   07
        b) Differentiate between flexible and rigid pavements   08

Q.10   a) Explain origin and destination study. What are various uses of O and D studies?   07
        b) Discuss in detail expansion joint and contraction joint   08

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