Branch: Civil, Civil(PHE)&QSCM   **Sub: Structural Drawing**
Time: 3 hrs.   **Max Marks: 100**   **Scheme: New**   **Sem: 6**
   Instructions: 1) Attempt four questions selecting two questions
            from each section.
        2) Assume suitable dimensions if not given.
        3) Clearly mention the scale used in each question.
        4) Use only blue pen.

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SECTION-A

Qno1: Draw to a suitable scale the detailed Plan and Sectional Elevation of a two way slab for a room 4.00m x 4.50m. The thickness of a slab is 160mm including concrete cover of 20mm on all sides. The bearing on walls is 300mm.Details of reinforcement is as under. Also draw the bar bending schedule.
    (A) Main bars =12mm dia @150mm c/c with alternate bars bent up
    (B) Distribution steel =12mm dia @15ommc/c

                                                         (25)

Qno2: Draw a longitudinal section and two cross sections one at Centre and other near Support for a doubly reinforced beam from the following data. Also draw the bar bending schedule.
    (A) Clear span = 6.20m
    (B) Bearing on supports =300mm
    (C) Beam size =400 x 650mm overall
    (D) Tensile reinforcement =7nos. 25mm dia bars (4 straight and 3 bent up at 800mm from supports).
    (E) Compression reinforcement =4 nos. 20 mm dia.
    (F) Shear Reinforcement consists of 10 mm dia @ 120 mm c/c upto 1.8 m from the face of support at each end and 8 mm dia @ 150 mm c/c in between.

                                                          (25)

Qno3: Draw the plan and cross section of a dog legged stair consisting of two flights and a landing in between with the following data:
    (A) Staircase hall = 5.00m x 2.50m
    (B) Size of landing = 2.50m x 1.25m
    (C) No. of steps = 11 no. in each flight
    (D) Rise = 150mm
    (E) Tread = 250mm
    (F) Reinforcement 12mm dia @100mm c/c
    (G) Distribution steel 8mm dia @180mm c/c

                                                          (25)

Qno4: A square R.C.C column rests on R.C.C footing. Draw the detailed Sectional Elevation and Plan of the column and column footing with the following data:
    (A) Size of column = 600mm x 600mm
    (B) Size of footing =3.20m x 3.20m
    (C) Thickness of footing at the face of column=700mm
    (D) Thickness of footing at the end=250mm
    (E) Depth of footing below the ground level=1.80m
    (F) The footing reinforcement = 12mm dia bars @160mm c/c both ways
    (G) Column reinforcement =8 nos. 20mm dia bars
    (H) Lateral ties 6mm dia @150mm c/c
    (I) Cover in footing=75 mm effective
    (J) Cover in column = 40mm clear
Details of reinforcement should be shown clearly

                                                          (25)

Drawing (handwritten)

Qno5: Draw the details of Toe joint of a fink roof truss, the following data is given:
    (A) Thickness of wall=300mm
    (B) Cement concrete block =300 x 300 x 200mm
    (C) Bearing plate=300 x 300 x 16mm
    (D) Holding down bolt=4nos. 16mm dia
    (E) Shoe angles=ISA 80 x 80 x 10mm
    (F) Gusset plate=10mm thick
    (G) Main tie =ISA 60 x 60 x 8mm
    (H) Principal chord=ISA 60 x 60 x 8mm   (25)

Qno6: Draw plan, front elevation and side elevation of a column with gusseted base from the following data:
    (A) Column ISHB 400@759.3 N/m
    (B) Cleat Angle= ISA 130 x 130 x 12mm
    (C) Dia of Rivets= 16mm
    (D) Base plate= 600 x 900 x 20mm
    (E) Gusset plate= 600 x 300 x 16mm
    (F) Holding down bolt=20mm dia 4 nos. 200mm long   (25)

Qno7: Draw Front Elevation & Cross Section of a Plate Girder from the following data:
    (A) Clear span of plate girder = 6.75 m
    (B) Web plate = 920 X 8mm
    (C) Flange angles = 2ISA 125 X 95 X 8 @ 130.47 N/m
    (D) Bearing Plate = 400 X 500 X 12mm
    (E) Size of concrete block = 500 X 400 X 250mm
    (F) End bearing Stiffeners = ISA 200 X 100 X 10 @ 223.67 N/m
    (G) Vertical Stiffeners = ISA 100 X 65 X 8@ 97.12 N/m - 1000mm c/c
    (H) Vertical Stiffeners = ISA 100 X 65 X 8@ 97.12 N/m - 1 No
    (I) Flange plates = 450 X 16 mm; one at top & one at bottom
    (J) Thickness of filler plate = 10 mm   (25)

Qno8: Draw the front and side elevation of a framed connection of a beam with a column from the following data:
    (A) Column = ISHB 400@806.4 N/m
    (B) Beam = ISLB 300@369.8 N/m
    (C) Cleat angles= 2 ISA 90 x 90 x 8 mm
    (D) Dia of rivets= 20mm   (25)

******END******

86190136

Branch: Civil Engineering   Sub: Repair & Maintenance of Buildings
Time: 3 hrs.   Max Marks: 100   Scheme: New   Sem: 6
Instructions: 1) Attempt any 5 questions.
**   2) Use only blue pen.**

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Qno1 a: Define maintenance with reference to buildings. Explain the various factors which influence the decision to carry out maintenance. (10)

b: Explain various environmental factors causing deterioration of structures. (10)

Qno2 a: What is the importance of maintenance budget estimates? Write the different systems of cost estimation for budget allocation. (10)

b: Explain how the various agencies of deterioration effect metals and plastics and explain how it can be minimized. (10)

Qno3 a: Explain briefly the effect of lack of maintenance on RCC Members. (10)

b: What is the aim of Ultrasonic Pulse Velocity Test and explain how it is done. (10)

Qno4 a What are the various defects that occur in load bearing walls? How can these be repaired? (10)

b: Describe the importance of physical measurement for defect diagnosis in buildings List the steps involved in sequence for diagnosis of building defects. (10)

Qno5 a: Explain the importance of preventive maintenance in roofs and other wet areas in buildings. (10)
b: What are protective coatings? List the different type of protective coatings which can be used for protection of concrete surfaces. (10)

Qno6 a: Describe ideal characteristic of any water proofing system in flat roofs (10)

b: Explain briefly the steps involved in epoxy injection method for crack repairs in buildings (10)

Qno7 a: List steps in repair treatment for sealing the joints. Describe briefly precautions necessary in joint sealing 10)

b: How are overhead water tanks effected by cracks? Give their prevention. (10)

Qno8 a: Explain different methods of surface preparation. (10)

b: Explain physical method of strip approach to repair DPC. (10)

Qno9 a: Describe the most probable causes for dampness in foundations and basements. Give the remedial measures to prevent it. (10)

b: How formation of honey comb and voids affect the performance of concrete. How these defects are repaired. (10)

Qno10 Write short note on the following:
(i)   Shotcreting
(ii) Efflorescence removal
(iii) Repair mortars
(iv) Water Borne Adhesives

(5 x 4)

******END******

no1 a: Explain the Bar chart method of project management? Also give the limitations of Bar Chart Method. (10)

b: Draw the network and number the events.
   Activity B follows A, Activities C and D both follow B, Activity H follows D, Activities E and J both follow C, Activity F follow E, Activity K follows J and H, Activity G follows F, Activity L follows K and Activity M Follows both L and G. (10)

no2: A network is given in below fig (FIG.1), with the expected time of completion of each activity. Determine the earliest expected time and latest occurrence time for each event. Also determine the critical path. (20)
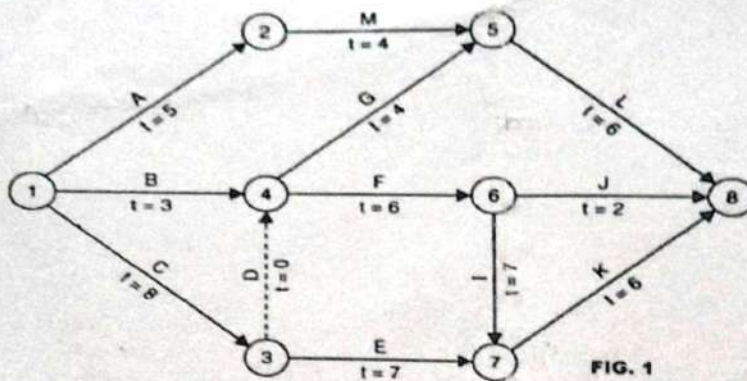

FIG. 1

no3 a: What is the importance of construction planning? Also discuss the Pre-Tender Stage and Contract Stage. (10)

b: Explain the Line and Staff type of Organization. Also give its advantages and disadvantages (10)

no4 a: What do you mean by Military type of Organization? Give its merits and demerits. (10)
    b: What principles are followed for storing and stacking materials at site? (10)

no5 a: What is the condition of the construction workers in India and what are different systems of wage payment adopted in India? (10)

b: Give the difference between Imprest cash account and temporary advance. Also write down the instructions followed for writing a cash book (10)

no6 a: Discuss direct and indirect cost in detail. (08)

b: With the help of a curve explain the Cost Time Optimization of a simple job. (12)

no7 a: Explain the principles of inspection and quality control. (10)
    b: Give the quality control measures to be adopted for Earth Work and Masonry Work. (10)

no8 a: Write down the five physiological causes of accidents. (10)

b: Explain the Labour Welfare Fund Act 1936 (Amended). (10)

no9: Explain the following terms:
   (A) Controlling and Coordinating
   (B) Staffing and Directing
   (C) Allotment of funds
   (D) Re-appropriation of funds bill (20)

no10 a: What is casual labor roll? Explain the use of casual labor roll and precaution taken in its preparation (10)

b: What are the various systems of account? What are the advantages of keeping the account sub-head wise? (10)

******END******

86130173

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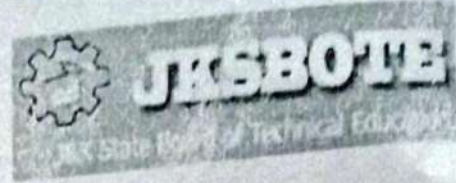
Branch: Civil,PHE(Civil)&QSCM
Sub: Earthquake Resistant Building Construction
Time: 3 hrs. Max Marks: 100 Scheme: New Sem: 6
Instructions: 1) Attempt any 5 questions.
              2) Use only blue pen.

Qno1 a: What is the use of seismic zoning maps? In which seismic zone does the Delhi and J&K fall? (10)

   b: What do you understand by the term magnitude of an earthquake? Give its classification based on magnitude. (10)

Qno2 a: What is the difference between interplate and intraplate earthquake? (10)

   b: Explain the causes of earthquakes. Define static and dynamic loading. (10)

Qno3 a: What do you mean by rigid & flexible diaphragms? What causes the failure of diaphragm? (10)

   b: How do the openings in walls affect their performance during earthquake motion? (10)

Qno4 a: Explain the terms flexural wall and shear wall with the help of a diagram. (10)

   b: Explain the general principles to be followed for construction of earthquake resistant buildings. (10)

Qno5 a: Explain the technical reasons for providing vertical reinforcement in masonry walls. Also list the points to be considered while providing them. (10)

   b: Why is it necessary to provide through stone in stone masonry walls? Give various guidelines with diagrams for using through stone in stone masonry walls. (10)

Qno6 a: Why is it necessary to provide bands in masonry construction? Explain with neat sketches. (10)

   b: How does configuration of a building affect its seismic performance? (10)

Qno7 a: What special provisions should be taken care for earthquake resistant structures as per IS 4326. (10)

   b: How retrofitting of masonry buildings is done. Explain three methods. (10)

Qno8 a: List any three common types of damages identified in RC buildings? (10)

   b: What are the damages caused due to in adequate ductile detailing of structural components? (10)

Q9 a: What is jacketing and how is it done? (10)

   b: Explain the following:

   (A) Splicing
   (B) Special confining reinforcement
   (C) Importance factor (10)

Qno10 a: What are different types of casualties? What are the points to be kept in mind while managing casualties? (10)

   b: What are the safety measures to be followed for preventing hazards due to breakdown of public utilities? (10)

86190102   Rollno: ....

Branch: Civil Engineering(New Scheme)   JKSBOTE
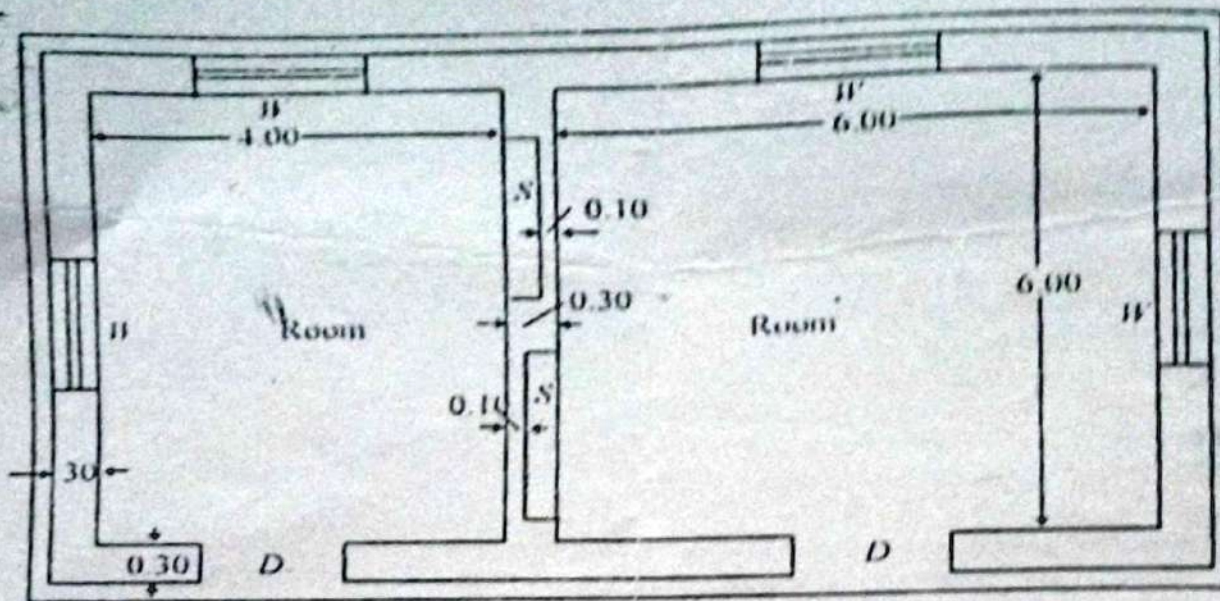   J&K State Board of Technical Education
Sub: QUANTITY SURVEYING AND VALUATION
Time: 3 hrs. Max Marks: 100 Scheme: New Sem: 6
Instructions:-

1) Attempt FOUR Questions including Q. No: - 1 which is Compulsory.
2) Assume suitable data wherever necessary.   Use only blue pen.

1	Calculate the quantities of following items of a residential building as shown in Figure 01 and enter these in a Measurement Sheet **(Attempt only 4 items)** i) Stone Masonry (1:6) in foundation Trenches ii) Earthwork in Back Filling of Foundation Trenches iii) Ist Class Brickwork in Superstructure in CM 1:4 iv) Reinforced Cement Concrete Work v) External Wall Plaster 20 mm thick in CM 1:3	4 × 10
2	Calculate the quantity of earthwork for a road with the following data: i. Formation width =10m ii. Side slope in cutting=1:1 iii. Side slope in filling =1.5:1 iv. The Formation has a falling gradient of 1 in 200 from chainage 0 to 150 m and falling gradient of 1 in 120 from chainage 150 to 300. v. R.L of formation at Chainage 0.00 = 102.50 m vi. The R.L of ground are as follows:-	20

Chainage (m)	00	30	60	90	120	150	180	210	240	270	300
Ground RL, m	101.70	105.50	101.95	101.80	101.90	101.85	101.90	101.55	101.20	101	100.60

3 (a)	Explain Plinth Area Method and Cubic Rate Method for preparing Preliminary Estimate.	5 × 2
(b)	Calculate the Rate per cubic meter for Random Rubble Stone Masonry in superstructure in cement sand mortar of 1:6 proportion including supply of materials, labour, T&P etc	10
4 (a)	A masonry wall is to be constructed of Ist Class Brickwork in C.M (1:3) of length 25 m. Carry out Rate Analysis for Brickwork if the height of wall is 3.5 m and thickness 300 mm.	15
(b)	What is a Tender Notice? List the particulars that need to be given in a Tender Notice.	05
5 (a)	Prepare Bar Bending Schedule for a Square RCC Column 45 cm wide and its footing 350 cm wide having 8 No 25 mm dia bars as main column reinforcement and 10 mm dia @ 240 mm c/c as lateral reinforcement. Length of Column is 6 m and depth of footing is 1200 mm. Footing consists of 22 No 20 mm dia bars as reinforcement in both directions. Take suitable clear cover for column and footing.	15
(b)	Explain what precautions have to be taken to make entries in a measurement book.	05
6 (a)	Explain the following:- i) Contract Documents ii) Negotiated Contract	05 × 2
(b)	Write down the detailed specification of the following items: i) Terrazo Flooring. ii) External Plastering	05 × 2
7 (a)	Explain the various factors affecting the value of a Property.	08
(b)	The Plinth Area of a building 900 Sqm having an age of 12 years. The cost of land is Rs 5 Lacs. Find the capitalized value allowing for depreciation etc. Calculate the net value of the building in case it needs urgent repairs of Rs 80000/- Present cost of construction may be taken as Rs 2500 Per Sqm. Rate of interest for depreciation is 6.5% and future life of building is 60 years	12

Q5v

Plan (a)

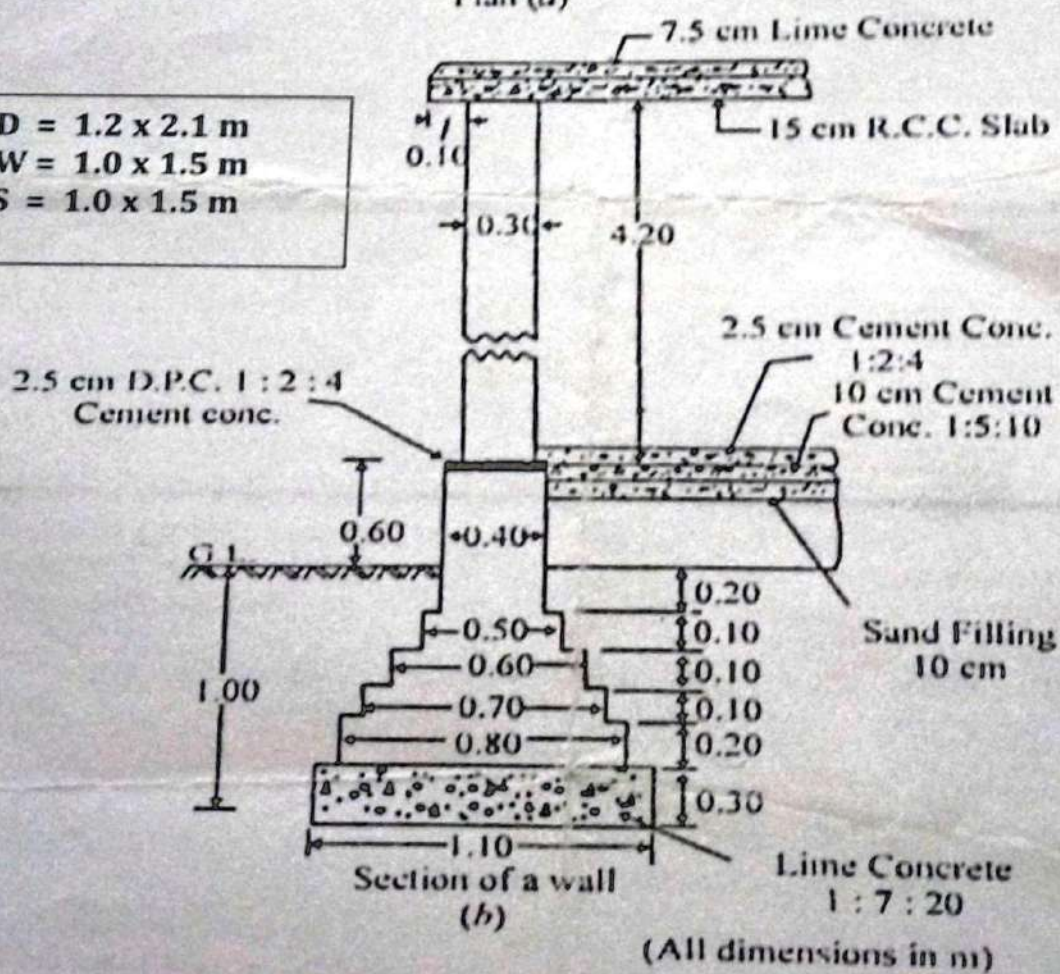D = 1.2 x 2.1 m
W = 1.0 x 1.5 m
S = 1.0 x 1.5 m

7.5 cm Lime Concrete

15 cm R.C.C. Slab

2.5 cm D.P.C. 1 : 2 : 4
Cement conc.

2.5 cm Cement Conc.
1:2:4
10 cm Cement
Conc. 1:5:10

Sand Filling
10 cm

0.20
0.10
0.10
0.10
0.20
0.30

0.60 0.40
0.50
0.60
0.70
0.80
1.00
1.10

Section of a wall
(b)

Lime Concrete
1 : 7 : 20

(All dimensions in m)

FIGURE – 01