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MJ-22 JAMMU & KASHMIR BOARD OF TECHNICAL EDUCATION

Subject: Repair and Maintenance of Buildings **Branch: Civil Engg.**

Semester: 6th **Scheme: New** **M. Marks: 100** **Time: 03 Hours**

Instructions:

1. **Attempt any Five Questions.**
2. **Figures to the right indicate marks.**

Q1.a) Describe the factors influencing the repair and maintenance of a building. (2x10)

b) What do you mean by Maintenance, Define Preventive Maintenance?

Q2.a) Explain deterioration of a structure. Explain the factors responsible for deterioration of a Structure?

b) List the factor's which affects the durability of concrete. Which steps are taken to avoid deterioration of timber? (2x10)

Q3. a) Explain the ill effects of dampness. Give the remedial measures of preventing dampness in structures.

b) What are the requirements of systematic investigation of defects? List the steps involved in the systematic approach of investigation? (2x10)

Q4. a) What do you mean by non-destructive tests? Write down the silent features of non - destructive tests?

b) Explain how the various agencies of deterioration effect bricks and explain how it can be minimized? (2x10)

Q5. a) Which are the various defects in buildings due to dampness? What are the sources of damps in buildings?

b) List the various environmental effects which cause defects in buildings? What are the causes of cracks in foundation? (2x10)

Q6. a) What are the various tests carried out for knowing the quality of buildings? Explain in brief?

b) What are the causes of rising dampness through DPC? List the causes of buckling of columns? (2x10)

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Q7. a) Explain importance of compatibility of repair materials with original construction? Explain the basic characteristics of repaired material?

b) Describe factors influencing durability of repaired elements? Explain in brief the functions of joint sealants? **(2x10)**

Q8. a) Describe briefly special properties of curing compounds? Explain the properties of sealants?

b) What are the essential characteristics of rebar primer? Write a short note on anti-carbonating coating? **(2x10)**

Q9.a) Explain the basic principle of waterproofing? Write the characteristics of an ideal waterproofing system.

b) Explain briefly the process of preventing corrosion in steel reinforcement in RCC elements. **(2x10)**

Q10. Write short notes on:

i) Epoxy injection

ii) Guniting

iii) Stitching

iv) Underpinning

v) Grouting **(5x4)**

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Subject: Quantity Surveying & Valuation **Branch: Civil, Civil (PHE), Arch Asstt.**

Semester: 6th **Scheme: New** **M. Marks: 100** **Time: 03 Hours**

Instructions:

1. **Attempt any Four Questions but question no one is compulsory.**
2. **Figures to the right indicate marks.**

Q1. Fig 1 shows a room of internal dimensions 4.0mx 2.5m. Calculate the quantities of following items of work:

A. Earth work in excavation in foundation.
B. Cement concrete in foundation.
C. 1:4 mix D.P.C 2.5cm thick.
D. Stone work in 1:4 mix in foundation and plinth. **[40]**

OR

A. Brick work in CM in 1:5 mix in superstructure.
B. Cement plaster in 1:5 mix interior walls of a room.
C. Wood work in doors and windows.
D. R.C.C slab for a room in 1:2:4 mix. **[40]**

Q2. Write down the units of measurement and units of payment of the following:

A. Rock excavation
B. Lime concrete in foundation
C. Cement in bed plates
D. Cutting of trees
E. Brick edging
F. Cut stone work in jali
G. Mud flooring
H. R.C.C slab roofing
I. Phish pointing
J. Sawing of timber **[10x2]**

Q3. Calculate the materials of following items of work:

A. Ashlar masonry in superstructure in cement mortar (1:5) for 1 cu.m.
B. Cement concrete 1:4:8 with 50 mm nominal size in foundation for 10 cu.m. **[2x10]**

Q4. Calculate the quantity of earth work for a portion of a road on a uniform ground with the following data by prismoidal formula method:

Length of road=200m
Height of bank at one end =2m
Height of bank at other end=3m
Formation width = 10.00m
Side slope in filling = 2:1

[20]

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Q5. Work out the quantities of the following items of a retaining wall shown in fig.2
A. Cement concrete in foundation.
B. Stone masonry length of the wall=200m. **[2x10]**

Q6. A person purchased a property of Rs 20,00,000/- assuming that its net salvage value after 30 years will be Rs 2,00,000/- determine amount of depreciation each fear considering it to be uniform? **[20]**

Q7. Define the following terms:-
a) Sinking fund.
b) Straight line method of depreciation. **[2x10]**

Q8. Define any two of the followings:
A. Plinth area and carpet area
B. Capital cost and dag work
C. Index of building cost **[2x10]**

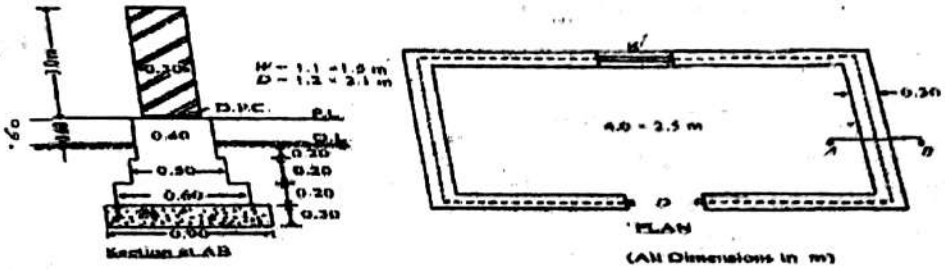

Fig. 1

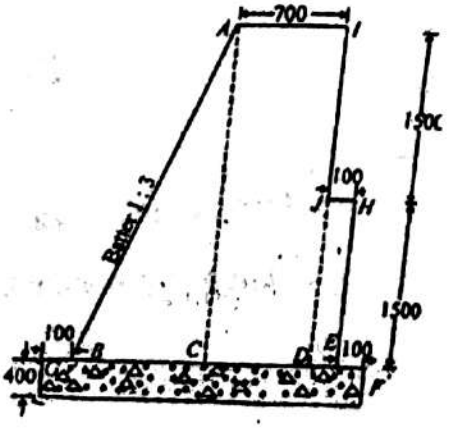

Fig.2

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MJ-22 JAMMU & KASHMIR BOARD OF TECHNICAL EDUCATION

Subject: Earthquake Resistance Building Construction **Branch: Civil, Civil (PHE), QSCM**

Semester: 6th **Scheme: New** **M. Marks: 100** **Time: 03 Hours**

Instructions:

1. **Attempt any Five Questions.**
2. **Figures to the right indicate marks.**

Q1.	Explain in detail the cause of earthquakes?	[20]
Q2.	What are seismic waves? Explain different types of seismic waves with the help of diagram?	[20]
Q3.	What is diaphragm? Explain diaphragm failure?	[20]
Q4.	Define out-of-plane failure? What are its main causes?	[20]
Q5.	Explain in detail the role of vertical reinforcement in retrofitting the structure?	[20]
Q6.	Discuss the importance of ductile detailing in R.C.C structure?	[20]
Q7.	How will you identify seismic damages in building components?	[20]
Q8.	Explain various types of safety measures to be followed in rescue operation?	[20]
Q9.	What are the different types of casualties? What are the points to be kept in mind while managing casualties?	[20]
Q10.	What are the different types of disaster's?	[20]

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ROLL NO: .....

MJ-22 6TH SEMESTER-CIVIL ENGINEERING

SUBJECT:- STRUCTURAL DRAWING

MAX MARKS:- 100 TIME ALLOWED:- 4 Hours.

Instructions for candidate:-

- Attempt four questions with TWO questions from each section.
- Assume suitable data wherever necessary. Use blue pen only.

SECTION A

Q.NO1: Draw to a suitable scale the sectional plan and sectional elevation of a restrained two way slab from the following data:
Size of room= 6m x 4m
Thickness of walls= 300mm
Thickness of slab= 150mm (25)
Bearing on walls= 150mm
Reinforcement along shorter span= 10mm φ @110mm c/c
Reinforcement along longer span=10mm φ @150mm c/c.
Torsion Reinforcement at all four corners in the form of mesh 10mm φ @100mm c/c both ways extended upto shorter span over 5.

Q.NO2: Draw to a suitable scale the L- section and two cross sections (one at the mid span and other near the support) of a simply supported RCC beam having the following data:
Size of beam= 400 x 600mm
Clear span= 4.5m (10,10,5)
Bearing on walls= 300mm
Thickness of walls= 500mm
Main reinforcement = 3 – 20mm φ (out of which one bar is bent up at l/7 from the centre of support).
Shear stirrups= 8mmφ two legged @200mm c/c.
Anchor bars= 2 - 12mm φ.
Also prepare bar bending schedule.

Q.NO3: A staircase is needed to connect two floors separated by 3.20 heights. The going space available is 4.30m. Design and draw a detailed sketch of the stair if the floors are of a residential building.
Height between floors= 3.20m
Thickness of roof slab= 150mm (25)
Total height= 3350mm
Suitably assume the missing data.

Q.NO4:- Draw to a suitable scale the sectional plan and sectional elevation for a rectangular column with isolated footing of uniform thickness. The column is tied to the slab of 140mm thickness at the upper end.

COLUMN DETAILS: -
Size of column = 350 x 650mm
Height of column above plinth level= 4.5m
Depth below ground level= 1.0m
Plinth level and ground level= 350mm
Reinforcement details (All HYSD bars used)
Longitudinal main bar = 6 – 25mm φ
Lateral ties = 8 mm φ 300 mm c/c.
FOOTING DETAILS: -

Thickness of footing = 500 mm
Size of footing = 3.0 m x 2.5 m
Parallel to shorter side = 16 mm φ @ 200mm c/c.
Parallel to longer side = 12 mm φ@200 mm c/c.
Also prepare bar bending schedule.

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SECTION B

Q.NO5:- Draw the front view of a ridge joint of a roof truss showing all the details including gusset plate, ridge sheet, A.C. roof covering, rivets and cleat etc as follows:-
Principal rafters = 2 ISA 55 X 55X 6mm inclined at 30° to horizontal
Inclined ties (upper ties) meeting at ridge = 1- ISA 55 x 55 x 6mm at 60° to horizontal
Cleats = ISA 100 x 75 x 6mm
Purlins = 50 x 50 x 5mm (25)
Gusset plate = 6mm thick
Rivets = 2omm diameter.

Q.NO6:-Draw the plan , front elevation and side elevation of a gusseted base stanchion from the following data:
Stanchion = ISHB 350@ 661.2 N/m
Gusset plate = 15 mm thick.
Flange cleat angle = 2 – ISA 150 X 115 X 8 mm
Web cleat angle = 2 – ISA 150 X 115 X 8mm (25)
Base plate = 800 x 600 x 20mm
RCC base slab = 900 x 700 x 400mm
Diameter of rivets = 20mm
Holding down bolts = 18mm – 4 no's Rag bolts.
Assume missing data:_

Q.NO7:- Draw to a suitable scale the sectional plan , front elevation and cross section of a simple plate girder from the following data:-
Clear span = 10m
web plate = 800mm x 12mm
bearing plate = 200mm x 250mm x 20mm
depth over angles = 810 mm
flange angles = 2 -ISA 80 mm x 80mm x8mm (25)
top and bottom cover = 200mm x 12mm
diameter of rivet = 20mm
size of concrete block = 300mm x 200mm x200mm
expansion gap = 12mm.

Q.NO8:- Draw two views(front and side elevation) of a column and two beams seated connections from the following data when two beams are connected to both the flanges of the column.
Column = ISHB 300 @576.8N/m
Beam = 2 – ISMB 225@ 306.1 N/m (25)
Seat angles = 2 – ISA 100 X 75 X 8 mm
Top cleat angle =2 – ISA 90 X 90 X 8 mm
Diameter of rivet = 20 mm

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JAMMU & KASHMIR BOARD OF TECHNICAL EDUCATION

Subject: Construction Management & Accounts **Branch: Civil, Civil (PHE), QSCM**

Semester: 6th **Scheme: New** **M. Marks: 100** **Time: 03 Hours**

Instructions:

1. **Attempt any Five Questions.**
2. **Figures to the right indicate marks.**

Q1. What are the important stages in construction? Explain with a flow chart? **[20]**

Q2. What are the different stages in construction planning? Explain? **[20]**

Q3. A. Differentiate between PERT and CPM?
B. What is the difference between event and activity? **[2x10]**

Q4. What are the advantages and disadvantages of line and staff organization? **[20]**

Q5. What are the principals of storing and stacking materials at sight? **[20]**

Q6. What are the various functions of a trade union? Give the advantages and disadvantages of a trade union? **[20]**

Q7. What is meant by 'Control of Progress'? State its purpose? **[20]**

Q8. Define inspection and quality control? What is the need for inspection and quality control in building construction? **[20]**

Q9. What safety measures you will adopt at construction site? **[20]**

Q10. A. Define casual labour roll and muster roll? **[15]**
B. What is imprest? **[05]**

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JAMMU & KASHMIR BOARD OF TECHNICAL EDUCATION

Subject: Steel Structures Design **Branch: Civil, PHE Civil, QSCM, Arch**

Semester: 6th **Scheme: New** **M. Marks: 100** **Time: 03 Hours**

Instructions:

1. **Attempt any Five Questions.**
2. **Figures to the right indicate marks.**

Q1. Calculate the strength of one 22mm ϕ rivet, using power dnven shop rivet (PDSR) and valve of τvf = 100 N/mm² in

A. Single shear **B.** Double shear **[20]**

Q2. Calculate the safe load for a 6mm fillet welded joint with effective length of 150 mm? The permissible shear stress in the weld is 108 N/mm²? **[20]**

Q3. Calculate the strength of ISA 100 x 65 x 8mm when used as a tension member with longer leg connected at its ends by 16mm ϕ rivets. Take permissible tensile stress = 150MPa? **[20]**

Q4. A single angle discontinuous angle strut ISA 150 mm x 150 mm x 12mm @ 266.8 N/m is 3.5 m long. Calculate the safe load carrying capacity of the section if it is connected by one rivet at each end? **[20]**

Q5. Calculate the load carrying capacity of ISMB400 @ 604N/m to be used as a column. The effective length of column is 4m? **[20]**

Q6. Calculate the moment of resistance of a rolled steel beam ISLB 500 C T35.7N/m? Assume the permissible bending stress as 165MPa? **[20]**

Q7. An ISMB 500 @ 852.5 N/m has been used as a beam. The effective span of the beam is 4m and carries a point load of 15kN at the centre and a U.D.L of 12 kN/m inclusive of its own weight. Calculate:

A. Max bending stress
B. Average shear stress
C. Max shear stress

[20]

Q8. **A.** Explain steel as a construction material.
B. Explain the Mechanical properties of steel. **[2x10]**

Q9. State the assumptions made in the theory of riveted joints? **[20]**

Q10. Explain the advantages and disadvantages of welded joints? **[20]**