

2nd Sem / Civil

Subject : Construction Materials

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which of the following is a good fire-resistant stone? (CO1)

- | | |
|-----------|--------------|
| a) Clay | b) Granite |
| c) Quartz | d) Limestone |

Q.2 Burnt bricks can be further classified into how many types? (CO1)

- | | |
|------|------|
| a) 2 | b) 3 |
| c) 4 | d) 5 |

Q.3 Quarry tile is also called: (CO2)

- a) Granite tile
- b) Unglazed ceramic tile
- c) Stone tile
- d) Workshop tiles

- Q.4 The quality of timber does not depend upon: (CO3)
- a) Maturity of tree b) Time of felling
 - c) Type of tree d) Size of tree
- Q.5 The percentage of iron constituent in cast iron (CO4)
- a) 60-62 b) 20-30
 - c) 92-95 d) 41-46
- Q.6 Which of the following is not a natural abrasive? (CO5)
- a) Garnet b) Silicon
 - c) Diamond d) Flint

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Explosive is stored in special buildings known as _____. (CO1)
- Q.8 _____ bricks are required for one cubic meter of masonry. (CO1)
- Q.9 Gypsum is added to control _____ of cement. (CO2)
- Q.10 Painting saves the steel structure from _____. (CO3)
- Q.11 HPL is a resin and paper based thermosetting composite material. (T/F) (CO4)

Q.12 Asbestos is of two types: Chrysolite and Crocidolite.
(T/F) (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Enlist any five purpose of dressing of stones? (CO1)

Q.14 What are the common ingredients of a good brick earth? (CO1)

Q.15 Write short note on vitrified tiles. (CO2)

Q.16 What are the various laboratory tests on cement?
Give description of any one test. (CO2)

Q.17 Explain any five difference between natural seasoning and kiln seasoning. (CO3)

Q.18 What is cement paint? Write its two properties and three uses. (CO3)

Q.19 Give any four uses of mild steel. (CO4)

Q.20 What are the applications of FRP in building industry? (CO4)

Q.21 Describe the various methods of termite proofing. (CO5)

Q.22 Write short note on : (CO5)

a) Epoxies

b) Polymers

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Differentiate between clamp burning and kiln burning. (CO1)
- Q.24 Explain the procedure of manufacturing of cement by wet process. (CO2)
- Q.25 What is water proofing? Explain any two water proofing materials. (CO5)

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220725

Roll No.

2nd Sem / Civil

Subject : Civil Engineering Practices

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note:Very short questions. Attempt any eight questions out of ten questions. (8x1=8)

Q.1 Draw Spread Footing Foundation. (CO1)

Q.2 What is a Load-Bearing Wall? (CO2)

Q.3 Define Non-Load Bearing Wall. (CO2)

Q.4 Draw Damp Proof Course (DPC) on Plinth level (CO5)

Q.5 Draw the symbol for Brick. (CO6)

Q.6 Draw a T-Junction in brickwork. (CO8)

Q.7 Draw the symbol of wood. (CO9)

Q.8 Define Arch. (CO10)

Q.9 Draw symbol of Glazed Door. (CO11)

Q.10 Draw the symbol of concrete. (CO12)

SECTION-B

Note: Short answer type questions. Attempt any five questions out of eight questions. (5x8=40)

- Q.11 Draw the details of a spread footing foundation, including load-bearing and non-load-bearing walls, offsets, and DPC positions. Include the concrete and brick apron details. (CO2)
- Q.12 Prepare the plans of Corner junctions of walls with 1 Brick, thickness in English bond. (CO3)
- Q.13 Draw the plan and elevation of a circular arch and a segmental arch. (CO4)
- Q.14 Draw the elevation of glazed door. (CO6)
- Q.15 Draw cross-section of a TUBE well. (CO4)
- Q.16 Draw the damp proofing details in the basement of a building. (CO3)
- Q.17 Draw the cross-section of a typical unlined channel, In cutting. (CO8)
- Q.18 Prepare a layout plan of canal headworks based on typical irrigation engineering principles. (CO9)

SECTION-C

Note: Long answer questions. Attempt any one questions out of two questions. (1x12=12)

Q.19 Using the given data, draw the cross-section of an earthen dam (homogeneous). Assume the following: (CO10)

Height of dam = 10 m

Top width = 3m

Side slopes : Upstream 2:1, downstream 2.5:1

Foundation depth = 2 m.

Q.20 Draw the layout and cross-section of a rainwater harvesting system for a building as per BIS standards, including drainage arrangement and water storage tank. (CO11)

No. of Printed Pages : 4
Roll No.

220731

3rd Sem / Civil

Subject : Concrete Technology

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 What is the primary purpose of adding air-entraining agents to concrete? (CO1)
- a) To increase strength
 - b) To improve workability
 - c) To reduce shrinkage
 - d) To enhance durability
- Q.2 Which of the following types of cement is suitable for high-temperature applications? (CO2)
- a) Ordinary Portland Cement
 - b) Rapid Hardening Cement
 - c) High-Alumina Cement
 - d) Sulphate-Resisting Cement
- Q.3 What is the recommended water-cement ratio for a concrete mix with a slump of 75-100 mm? (CO3)
- a) 0.4-0.5
 - b) 0.5-0.6
 - c) 0.6-0.7
 - d) 0.7-0.8

Q.4 What is the purpose of using fly ash in concrete? (CO4)

- a) To increase strength
- b) To improve workability
- c) To reduce shrinkage
- d) To enhance durability

Q.5 Which of the following is a type of fiber reinforcement used in concrete? (CO4)

- a) Steel fibers
- b) Glass fibers
- c) Polypropylene fibbers
- d) All of the above

Q.6 What is the purpose of curing concrete? (CO5)

- a) To increase strength
- b) To improve workability
- c) To reduce shrinkage
- d) To enhance durability

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 The process of adding water to cement to form a paste is called _____. (CO1)

Q.8 The fineness modulus of a sand sample is _____. (CO2)

Q.9 The purpose of curing concrete is to _____. (CO3)

Q.10 The recommended slump for concrete to be placed in a column is _____. (CO4)

Q.11 The type of cement suitable for underwater construction is _____. (CO5)

Q.12 The purpose of using a super plasticizer in concrete is to _____. (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain the types of aggregates used in concrete. (CO1)

Q.14 Explain the concept of water-cement ratio. (CO2)

Q.15 Explain the concept of workability in concrete. (CO2)

Q.16 What are the precautions to be taken during finishing of concrete? (CO3)

Q.17 Describe the differences between hand mixing and machine mixing. (CO3)

Q.18 What are the precautions to be taken during placement of concrete? (CO4)

Q.19 Explain the purpose of curing concrete. (CO4)

Q.20 Explain the types of cement used in high-temperature applications. (CO4)

Q.21 Explain the purpose of using fly ash in concrete. (CO5)

Q.22 Explain the concept of fineness modulus. (CO2)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain the principles of concrete mix design. (CO4)

Q.24 Describe the various methods of curing for concrete. (CO5)

Q.25 Write the name of non-destructive tests and explain any one in detail. (CO6)

No. of Printed Pages : 4

220735/180731/170731

Roll No.

/120731/030731

3rd Sem / Civil, Brick Tech, Const Mgmt, Highway Engg.

Subject : Fluid Mechanics

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Unit of surface tension is (CO1)

- a) N/m
- b) N/m^2
- c) No unit
- d) N

Q.2 If M and G are at same point, the body is in (CO2)

- a) Stable equilibrium
- b) Unstable equilibrium
- c) Neutral equilibrium
- d) None

Q.3 Venturimeter is always placed in (CO3)

- a) Horizontal position
- b) Vertical position
- c) Inclined position
- d) Any of the above

Q.4 Which of the following is major energy loss? (CO4)

- a) Due to bend in pipe
- b) Due to sudden contraction in pipe
- c) Due to friction
- d) Due to pipe fitting

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Q.5 Which is dimensionless? (CO4)

- a) Reynold's number b) Mach's number
c) Euler's number d) All of these

Q.6 Rectangular channel section is most economical when (CO5)

- a) $d=b$ b) $d=b/2$
c) $d=2b$ d) $b/4$

Where d -depth of channel, b -Width of channel

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Vacuum pressure is also called _____ (CO1)

Q.8 The point where the resultant pressure acts is called _____ (CO2)

Q.9 Flow of fluid through a tapered pipe is _____ flow. (CO3)

Q.10 Dimensionless formula of velocity is _____ (CO5)

Q.11 The water in the canal flows under _____ (CO5)

Q.12 Priming is necessary for a _____ pump. (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 If specific gravity of fluid is 1.62, calculate mass density, specific weight and specific volume. (CO1)
- Q.14 Write a short note on differential manometer. (CO1)
- Q.15 State any two use of hydraulic coupling. (CO2)
- Q.16 Define the center of buoyancy, meta-center and meta-centric height. (CO1)
- Q.17 Write down any two limitations of Bernoulli's theorem. (CO3)
- Q.18 Discharge is measured by a rectangular notch of crest width equal to 0.3 m of a rectangular channel. If the depth of water above crest is 0.12 m and $C_d = 0.62$, find the discharge. (CO3)
- Q.19 Oil, having specific gravity 0.9 is flowing through a pipe of 0.15 m diameter at the rate of $0.0275 \text{ m}^3/\text{s}$. Find the type of flow if the viscosity of oil is 3.8 poise. (CO4)
- Q.20 Write short note on limitations of dimensionless analysis?
- Q.21 Enlist any five difference between flow through Open channel and Flow through pipe.

Q.22 Define the following :

(CO5)

- a) Hydraulic pump
- b) Cavitation
- c) Priming
- d) Pitting

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 A rectangular block is 4m long, 3 m wide and 1.40 m high. The depth of immersion of the block is 1.0 m in sea water. If the center of gravity is 0.70 m above the bottom of the block, determine the metacentric height. Take the density of sea water is 1030 Kg/m^3 (CO2)

Q.24 A 30 cm diameter pipe, conveying water, branches into two pipes of diameter 20 cm and 15 cm respectively. If the average velocity in the 30 cm diameter pipe is 2.5 m/s, find the discharge in the pipe. Also determine the velocity in 15 cm pipe, if the average velocity in 20 cm pipe is 2 m/s. (CO3)

Q.25 Explain the construction and working of centrifugal pump with neat sketch. (CO5)

(1980)

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Roll No.

/170747/030745

Subject : Structural Mechanics

M.M. : 60

Note: Multiple choice questions. All questions are compulsory (6x1=6)

a) N/m b) N/m^2
c) Nm/s d) Ns/m^2

- a) Shear force is maximum
- b) Transverse loading is zero
- c) Shear force is either zero or changes sign
- d) None

a) One end is fixed and other is free

(1) 220732/180732/120732
/170747/030745

Q.11 The strength of a beam mainly depends on _____ (CO4)

Q.12 A frame in which $n=2j-3$ is called _____. (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain the proportional limit, elastic limit and yield point in tensile test of mild steel. (CO1)

Q.14 Explain the types of stresses and strains. (CO1)

Q.15 Draw shear force and bending moment diagram for a simply supported beam carrying concentrated load W KN at mid-point of the span? (CO2)

Q.16 A cantilever beam 3 m long carries loads of 2 KN and 1.5 KN at a distance of 1 m and 2 m from free end respectively. Draw S.F and B.M diagrams. (CO2)

Q.17 State and prove the theorem of parallel axis. (CO3)

Q.18 The diameter of a circular section is 100 mm, find moment of inertia about horizontal axis passing through centroid. (CO3)

Q.19 List the assumptions made in the theory of simple bending. (CO4)

Q.20 Determine the maximum slope and deflection in a cantilever beam carrying a point load at the free end. (CO4)

Q.21 Write down the assumptions and limitations of Euler's formula. (CO5)

Q.22 Explain method of joints for analysis of truss. (CO5)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 A crane lifts a load of 30 kN. Find the diameter of the steel wire of the crane, so that the stresses produced in the wire does not exceed 100 N/mm^2 . Also find the elongation per meter length of the rope when $E = 2 \times 10^5 \text{ N/mm}^2$. (CO1)

Q.24 Explain types of end supports and types of beams with neat sketches. (CO2)

Q.25 Prove the bending equation i.e. $M/I = \sigma/y = E/R$ (CO4)

3rd Sem / Civil

Subject : Surveying - 1

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which of the following surveys measures the Earth's curvature? (CO1)

- a) Geodetic survey
- b) Topographic survey
- c) Hydrographic survey
- d) Engineering survey

Q.2 What is the purpose of a bench mark in leveling? (CO2)

- a) Reference point for measurements
- b) Starting point for survey
- c) Ending point for survey
- d) Check point for errors

- Q.3 Which instrument measures vertical angles? (CO3)
- a) Theodolite b) Level
 - c) Compass d) Clinometer
- Q.4 What is the unit of measurement for angular distances in surveying? (CO3)
- a) Degree b) Minute
 - c) Second d) Radian
- Q.5 Which method of surveying uses traverse measurements? (CO4)
- a) Chain surveying b) Compass surveying
 - c) Leveling d) Traverse surveying
- Q.6 What is the purpose of a tie line in surveying? (CO5)
- a) Connects two or more survey lines
 - b) Establishes a reference point
 - c) Measures horizontal distance
 - d) Measures vertical distance

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 The intersection of two or more survey lines is called a _____. (CO5)
- Q.8 The horizontal distance between two stations is called a _____. (CO2)

- Q.9 The difference between magnetic and true north is called _____. (CO2)
- Q.10 The process of adjusting instruments to ensure accuracy is called _____. (CO1)
- Q.11 The type of leveling staff used for precise measurements is called a _____. (CO4)
- Q.12 The method of contouring using spot levels is called _____. (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain the concept of arbitrary meridian. (CO2)
- Q.14 Describe the types of chain surveying. (CO1)
- Q.15 What is the purpose of offsetting in chain surveying? (CO1)
- Q.16 Explain the principle of surveying. (CO1)
- Q.17 Describe the method of differential leveling. (CO3)
- Q.18 Explain the principle of radiation in plane table surveying. (CO5)
- Q.19 A surveyor measures the following WCB: (CO2)
- WCB = $57^{\circ} 45'$
 - WCB = $142^{\circ} 30'$
 - WCB = $231^{\circ} 15'$
 - WCB = $322^{\circ} 30'$

Calculate the RB for each and the included angle.

- Q.20 Define contour and write its characteristics. (CO5)
Q.21 Explain the concept of whole circle bearing. (CO2)
Q.22 Write the advantages of Plane table. (CO1)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Define plane table surveying, Explain radiation and traversing method. (CO4)
Q.24 Explain the principles of chain surveying, what operations are carried in chain survey. (CO5)
Q.25 Describe the direct and indirect methods of contouring in detail. (CO6)

3rd Sem / Civil

Subject : Building Construction

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 What is the primary function of a beam in a building?
(CO1)

- a) To provide structural support
- b) To resist lateral loads
- c) To distribute loads evenly
- d) To enhance aesthetic appeal

Q.2 Which type of material is commonly used for roofing?
(CO2)

- a) Asphalt shingles b) Clay tiles
- c) Concrete tiles d) Metal sheets

Q.3 What is the recommended thickness for a concrete slab?
(CO3)

- a) 100-150 mm b) 150-200 mm
- c) 200-250 mm d) 250-300 mm

Q.4 Which type of bond is used in brick masonry for curved walls? (CO3)

- a) English bond b) Flemish bond
- c) Stretcher bond d) Header bond

Q.5 What is the purpose of using a reinforcement in concrete? (CO4)

- a) To increase strength
- b) To improve durability
- c) To reduce shrinkage
- d) To enhance aesthetic appeal

Q.6 Which type of foundation is suitable for areas with high water table? (CO5)

- a) Shallow foundation b) Deep foundation
- c) Raft foundation d) Pile foundation

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 The process of applying a layer of mortar to a wall is called _____. (CO1)

Q.8 The recommended spacing for reinforcement bars in concrete is _____. (CO2)

- Q.9 The type of material used for making glass is _____.
(CO3)
- Q.10 The purpose of using a flashing in a building is to _____.
(CO4)
- Q.11 The type of bond used in brick masonry for interior walls is _____.
(CO1)
- Q.12 The recommended thickness for a plastered wall is _____.
(CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain the purpose of using a damp proof course in a building.(any five) (CO6)
- Q.14 Write a short note on load-bearing and non-load-bearing walls. (CO2)
- Q.15 Write the uses of DPC.(Any five uses) (CO2)
- Q.16 Write about the roofing materials used in building construction. (CO3)
- Q.17 Write the short note on mat foundation. (CO1)
- Q.18 Describe the shallow foundation. (CO2)
- Q.19 Explain the sliding door with diagram. (CO4)
- Q.20 Write about the wooden false ceiling. (CO4)

- Q.21 State the construction procedure of Ramp in a building. (CO5)
- Q.22 Explain the types of pointing. (CO5)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Write the names of different types roofs and explain the pitched roof and flat roof in detail. (CO1)
- Q.24 Write the names of different types doors and explain the framed and Panelled door in detail with diagram. (CO4)
- Q.25 Describe the various causes of Dampness in Detail. (Any Eight Cause) (CO6)

No. of Printed Pages : 4

220742

Roll No.

4th Sem / Civil

Subject : Surveying - II

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 When two tangents meet at a point, the point is known as _____
- a) Apex
 - b) Summit
 - c) Vertex
 - d) None of the above
- Q.2 What is the full form of G.I.S?
- a) Geological Information System
 - b) Geographical Innovative System
 - c) Geological Innovative System
 - d) Geographical Information System
- Q.3 When total station is sighted to the target, which of the operation acts first?
- a) Rotation of optical axis.
 - b) Rotation of vertical axis
 - c) Rotation of horizontal axis
 - d) Rotation of line collimation

- Q.4 Triangulation results consider to be more accurate while using _____ in DGPS.
- a) Single frequency mode
 - b) Dual frequency mode
 - c) Random frequency mode
 - d) None of these
- Q.5 A simple circular curve is designated by _____
- a) Radius
 - b) Length
 - c) Width
 - d) None of the above
- Q.6 Which among the following is a server based hardware platform of GIS?
- a) Autodesk Revit
 - b) STAAD Pro
 - c) Arc GIS
 - d) Google-maps

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 A vertical curve having convexity upward is known as _____ (Tangential Curve / Summit curve)
- Q.8 An instrument which is used to measure the area of the plan of any shape is known as _____ (Distomat / Planimeter)
- Q.9 Vertical angle is measurement in the total station as zenith angle. (True/False)
- Q.10 If we required the accuracy of positioning result within 10 to 15 meters then we use _____ (GPS / DGPS)

- Q.11 There are control Panels in front and at the back of the total station. (True/False)
- Q.12 DGPS can yield measurement good to a couple of meters in moving applications and even better in stationary situations. (True/False)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Describe the necessity of providing the transition curves in highways and railways.
- Q.14 Describe the use of various parts of a Total Station.
- Q.15 Describe the procedure of “Prolonging a Line in Backward Direction” Using an electronic Digital Theodolite.
- Q.16 Write a short note on GIS used in surveying.
- Q.17 Write the application of remote sensing system in civil engineering surveying works.
- Q.18 Write the uses of an EDM in civil engineering surveying works.
- Q.19 Describe the various causes of errors in surveying works, while using a DGPS.
- Q.20 Describe the use of various functional keys of a DGPS.
- Q.21 Write a short note on “Applications of DGPS” in civil engineering surveying works.

- Q.22 An instrument was set up at P and the angle of depression to a vane 4 m above the foot of the staff held at Q was $50^{\circ} 36'$. The horizontal distance between P and Q was known to be 3000 M. Determine the R.L. of the staff station Q, given that staff reading on a B.M. of elevation 436.050 was 2.865 m.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the procedure of temporary adjustment of an Electronic Digital Theodolite, with the help of diagram.
- Q.24 Explain the procedure of measurement of vertical angles using a Total Station as a Surveying instrument.
- Q.25 Two straights T_1V and Vt_2 of a road curve meet at an angle of 80° . Find the radius of curve which will pass through a point P, 30 meter from the point of intersection (v), the angle T_1VP being 30° . Also find the length of curve.

4th Sem / Civil

Subject : Water Supply and Waste Water Engineering

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 Dead end method of distributing water is also known as _____
- a) grid iron system b) Ring System
c) Radial system d) Tree system
- Q.2 Coagulants are used when turbidity of water is more than _____
- a) 50 ppm b) 70 ppm
c) 60 ppm d) 80 ppm
- Q.3 Filtration and sewage forming are methods of _____
- a) Land treatment b) Water treatment
c) Self purification d) All of these

- Q.4 The water which is not chemically pure but does not contain any harmful contents to human health is called_____
- a) Wholesome water b) Potable water
c) Palatable water d) Polluted water
- Q.5 The earth water circulatory system is known as _____
- a) Water cycle b) Transpiration cycle
c) Hydrological cycle d) Both a & b
- Q.6 The excess water from rain water, which run off on the surface of ground is called _____
- a) Waste water b) Drain water
c) Storm water d) None of these

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 _____ sludge is a sludge which remains for a longer period in the tank before removal. (Activated/ Septic)
- Q.8 The ratio of the maximum daily consumption to the average daily demands is _____ (1.0/1.8)
- Q.9 In a water distribution network _____ type of valve works automatically.(check valve / Sluice valve)

- Q.10 The velocity of sewer is responsible for floating of suspended matters is called_____ (Self cleaning velocity / Non-scouring velocity)
- Q.11 At about _____ percent moisture, sludge becomes dry.(20% / 10%)
- Q.12 Water supply scheme is usually designed for a life of _____ (75 years / 50 years)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Describe any five various factors affecting the per capita demand of water for a city.
- Q.14 Describe the use of “Stabilization Ponds” for the wastewater treatment to ensure the safe disposal of waste materials into the environment.
- Q.15 Write a short note on “Coagulation Process” of water treatment.
- Q.16 Explain the process of “Anaerobic Digestion” used for activated sludge treatment and disposal of sewage system.
- Q.17 Explain the working process of water treatment by “Reverse Osmosis System”.
- Q.18 Enlist various physical test conducted on water and describe any one of them in brief.

- Q.19 Write any five advantages of elevated reservoirs used for water distribution system.
- Q.20 Enlist any five necessity of sanitation.
- Q.21 Explain the working principle of water meter used in domestic water supply in India.
- Q.22 Describe the function of "Skimming Tanks" used for sewage treatment.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the method of "Disinfection of Water" with the help of graphical representation including break point chlorination.
- Q.24 Explain the working of "Grid-Iron Water Distribution System" along with its advantages with the help of a diagram.
- Q.25 Explain the "Disposal by Dilution" method of disposal of sewage.

4th Sem / Civil

Subject : Irrigation Engineering

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which of the following is a non-recording rainguage?

- a) Floating type rainguage
- b) Tipping bucket type rainguage
- c) Simon's rainguage
- d) Steven's weighing type rainguage

Q.2 A canal which is aligned at right angles to the contour is called _____

- a) Contour canal
- b) Watershed canal
- c) Branch canal
- d) Side slope canal

Q.3 Arepelling groyne is aligned _____

- a) Pointing up-stream
- b) Perpendicular to bank
- c) Pointing Down -stream
- d) Parallel to bank

- Q.4 A land is water is water-logged _____
- a) When the permanent wilting point is reached
 - b) When gravity drainage has ceased
 - c) When capillary fringe reaches the root zone of plants
 - d) None of these
- Q.5 The depth of water required to bring the soil moisture content of a given soil upto its field capacity is called _____
- a) Equivalent moisture
 - b) Hygroscopic water
 - c) Soil moisture deficiency
 - d) None of these
- Q.6 A river training work is generally required when the river is _____
- a) Aggrading type b) Meandering type
 - c) Degrading type d) Both (a) and (b)

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 During the growth period of the crop, the quantity of water supplied to a particular crop, giving maximum yield of the crop, is called _____ (minimum moisture content / Optimum moisture content)

- Q.8 When the land becomes water logged, the yield of crops in that area _____ (Increases/ Reduces)
- Q.9 In major projects, the area irrigated is more than _____ are multi-purpose in nature. (2000 Hectares / 10000 Hectares)
- Q.10 A curved masonry or concrete dam, convex upstream, that depends principally on the arch for its stability is known as _____ (Arched dam / Masonry dam)
- Q.11 An _____ is provided in the bank of canal to admit small drainage into it. (Inlet/ Outlet)
- Q.12 After sowing the crop, the first water applied to the crops is known as _____ water. (Delta/ Kor Water)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Enlist the name of various types of earthen dam. Explain any one of them.
- Q.14 Describe any five various factors causing the water-logging.
- Q.15 Describe the working principle of an automatic rain gauge.
- Q.16 Find the delta for sugarcane when its duty is 730 hectares/ cumec on the field and the base period of the crop being 110 days.

- Q.17 Write a short note on spillways and energy dissipators.
- Q.18 Describe the process of rain water harvesting using “Retention Ponds” and also write its advantages.
- Q.19 Enlist any five difference between weir and barrage.
- Q.20 Enlist the necessity of providing the groynes in river training works.
- Q.21 Write any five factors affecting surface runoff.
- Q.22 Describe any five advantages of Canal Lining.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain water Logging with their five causes effects.
- Q.24 Explain the elementary profile of a gravity dam with the help of diagram.
- Q.25 Explain the method of drip irrigation with the help of diagram and write its advantages.

5th Sem / Civil

Subject : Highway Engineering

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Where is headquarter of NHAI

- a) Bombay b) New Delhi
- c) Kolkata d) Chennai

Q.2 Convexity upward in middle of road called

- a) Gradient b) Kerbed
- c) Camber d) Median

Q.3 Steel balls are used in which aggregate test

- a) Crushing strength test
- b) Los angeles test
- c) Penetration test
- d) CBR test

Q.11 Give two name of aggregate test in highway.

Q.12 What is apron in airport engineering.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 What are the modes of transportation?

Q.14 Define carriage way with sketch.

Q.15 Define Road Alignment with their four requirements.

Q.16 Describe Impact test with their necessity.

Q.17 Enlist various factors to be considered for selecting a site for an airport.

Q.18 Differentiate between flexible and rigid pavement. (any five)

Q.19 What is borrow pit and spoil pot?

Q.20 Describe method of construction of WBM Road in steps.

Q.21 What are the causes of land slides? (any five)

Q.22 Enlist any four essential road construction safety tips.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the maintenance of Bituminous Road in details with sketch.
- Q.24 Explain the joints in cement concrete roads in details with sketch.
- Q.25 Discuss basic consideration governing alignment for a road in Plain area.

5th Sem/ Civil
Subject : Railways, Bridges & Tunnels

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 Importance of bridge are _____
- a) To reduce the travel time
 - b) To reduce accidents arising day by day
 - c) To minimize congestion on roads
 - d) All of the above
- Q.2 What is the primary purpose of bearing in a bridge?
- a) To transfer the load to the superstructure
 - b) To transfer the load to the track
 - c) To transfer the load to the embankment
 - d) To transfer the load to the substructure
- Q.3 What are some common methods for ventilating railway tunnels?
- a) Natural ventilation
 - b) Mechanical ventilation
 - c) A combination of natural & mechanical ventilation
 - d) All of the above

- Q.4 A bridge is called culvert if its span is up to
a) 12m b) 10m
c) 8m d) 6m
- Q.5 In case of railways
a) A detour round the hill is preferred
b) A open cut is preferred
c) Tunnelling is preferred
d) All of the above
- Q.6 The useful life of timber bridge is _____ years
a) 5-10 b) 10-15
c) 15-20 d) 20-25

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Topographical agricultural and industrial maps are used for the study of _____.
- Q.8 The broad gauge is _____ mm.
- Q.9 _____ is a common material for the manufacturing of rails.
- Q.10 Bearing plates are used in _____ sleepers.
- Q.11 Gravel is _____ than stone ballast.
- Q.12 _____ is the art of constructing a tunnel.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Enlist any four requirements of an ideal permanent way.
- Q.14 Give the requirements of an ideal rail. (any five)
- Q.15 What are the salient feature of concrete sleepers?
- Q.16 Give point of distinction between permanent and temporary bridges.
- Q.17 What do you understand by maintenance of bridges?
- Q.18 What are the function of tunnel? (any five)
- Q.19 Write a short note on lighting of tunnels.
- Q.20 What do you understand by mucking?
- Q.21 Enlist the function of fixtures and fastenings?
- Q.22 Describe the objective of signaling?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 What are the function of railway sleeper. Give any four requirement of a good sleeper. Name various types of sleepers. Explain any one?

- Q.24 Give the classification of tunnels according to its shapes along with diagram?
- Q.25 Write down the various purpose of maintenance and special maintenance?

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5th Sem/ Civil
Subject : Estimation & Costing

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory. (6x1=6)

- Q.1 How many bag of cement are required for 1 cum cement?
- a) 28.8 bags b) 2.8 bags
c) 28 bags d) 20 bags
- Q.2 The value of a property or its services calculated on the prevailing market rate to replace the same.
- a) Replacement value
b) Potential value
c) Rateable value
d) Distress value
- Q.3 Determination of actual cost of the work before the execution of it is called
- a) Estimate b) Valuation
c) Costing d) Expenditure

Q.4 The unit of measurement for R.C.C. work is in

- a) Sq. m b) Numbers
- c) Cubic meter d) Meter

Q.5 Plastering work is measured in

- a) Cubic meter b) Sq. m
- c) Number d) Meter

Q.6 Factors effecting the rate analysis

- a) Specification of items
- b) Present rate of materials
- c) Daily wages
- d) All of the above

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Working out the exact quantities of various items of work is known as _____.

Q.8 What is the volume of one bag of cement.

Q.9 Define unbalanced Tender.

Q.10 Define Estimate.

Q.11 Item rate contract is also known as _____.

Q.12 The thickness of plastering in indoor walls is _____.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 What is the principle of unit of various items of works? Example any four.
- Q.14 What is the difference between security deposit and retention Money?
- Q.15 Write down the unit of measurement & unit of payment for the following item of work:
a) Half Brick wall b) R.C.C. Work
- Q.16 Find out the dry material for 1 cum of R.C.C. work (1:2:4) having 1.5% steel)
- Q.17 Define overhead costs.
- Q.18 Describe centre line method for finding out quantities.
- Q.19 Write down the factor effecting the rate analysis. (Any four)
- Q.20 Explain the different method of valuation.
- Q.21 Prepare the tender documents for sewer lines.
- Q.22 What are the different method of computing depreciation?

SECTION-D

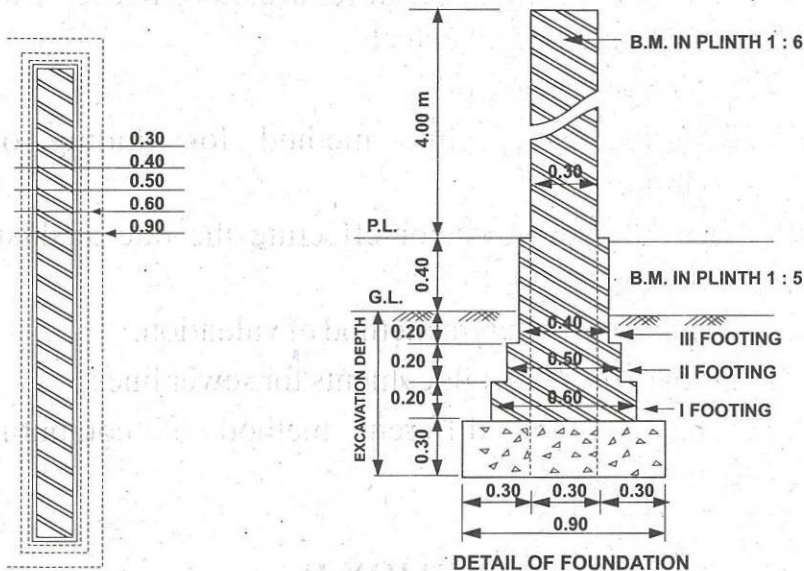
Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain various types of estimates.

Q.24 Prepare the analysis of rate for the coursed rubble stone masonry. In cement mortar 1:4. Assuming the suitable rate for required material and the manpower.

Q.25 Workout the quantities of the following items of work from wall:-

- 1) Excavation for foundation
- 2) Cement concrete 1:4:8 in foundation
- 3) 1st class brick masonry 1:4 in foundation and plinth
- 4) 1st class brick masonry 1:4 in superstructure.



Note :*

All, Dimensions are in m.

*

Assume suitable dimensions as required if specified or not visible clearly in the give figure.

6th Sem. / Civil Engg.**Subject : Steel Structure Design and Drawing**

Time : 6 Hrs.

M.M. : 120

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 As per ISI rolled Steel beams sections are classified into.
- a) two sections b) three sections
 - c) four sections d) five sections
- Q.2 Net areas for plates connected by chain rivetting is
- a) $(b - nd) \times d$ b) $(b - nd) \times t$
 - c) $(b - d) \times t$ d) None of these
- Q.3 When member is placed above the other and they are connected by means of rivets, the joint is known as
- a) Lap joint
 - b) Double cover butt joint
 - c) Single cover butt joint
 - d) Both (a) and (b)
- Q.4 The IS code which deals with steel structure is :
- a) Is! 456 b) Is! 18 P3
 - c) Is! 800 d) Is! 2000

- Q.5 Which of the following is not a type of column base.
- a) Slab base b) Rolled base
 - c) Gusseted base d) All of the above
- Q.6 Spacing of Purlins depend upon.
- a) Type of roof covering
 - b) Slope of the truss
 - c) Both (a) and (b) d) None of these

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Define moment of resistance.
- Q.8 ISSQ stand for _____.
- Q.9 Write the formula for strength of fillet weld.
- Q.10 Number of rivet required = Load in the member
- Q.11 What are Purlins.
- Q.12 The ratio of the rise to the span is called _____ of the roof truss.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 List the assumptions in the theory of simple bending.
- Q.14 Calculate the value of 20mm diameter rivet in a lap joint connecting two plates 10mm and 15mm thick. Take $\tau_{vf}=100\mu/\text{mm}^2$ and $\sigma_{pt}=270\mu/\text{mm}^2$
- Q.15 State various part of a roof truss.
- Q.16 Explain the advantage and disadvantage of welded joint.

- Q.17 Calculate the tensile strength of a tension member ISA 100x65x8mm, when it is connected by longer leg to a gusset plate using 20mm diameter rivets. Permissible tensile stress is 150 N/mm^2 .
- Q.18 What do you mean by fabrication.
- Q.19 Write the procedure for design of column.
- Q.20 What are the various sections used in tension member.
- Q.21 What are laterally restrained beams.
- Q.22 What is the economic spacing of roof truss.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Design a suitable section for a steel column of 3.50m unsupported length carrying a load of 500 KN. The column is continuous through more than two storeys and is restrained in position and direction at both ends.
- Q.24 An ISMB 500 @ 852.5 N/m carries a well of 22000 μ/m (excluding its own weight) The beam is simply supported over an effective span of 6m calculate maximum bending stress and a unique shear stress.
- Q.25 Calculate the gate compressive load carried by a double angle discontinuous strut composed of 2 ISA 90x60x8 mm placed back to back and connected on both side of gusset plate 8mm thick by two rivets. The actual length of strut is 2.53m.

PART-B

Note: Long answer type questions. Attempt any three questions out of four questions. (3x20=60)

- Q.26 Draw the heel joint of a roof truss with roof drainage arrangements.

Q.27 Draw the front and side elevation of two unequal columns splicing arrangements with following data.

Lower column = ISHB 300@618.1 μ /m

Upper column = ISHB 250@500.3 μ /m

Cover Plates = 400mm x 250mm x 20mm

Distribution plate = 300mm x 250mm x 20mm

Thickness of packaging plates = 25mm

Cleat angles = ISA 75x75x8mm

Nominal diameter of rivet = 20mm

Q.28 Draw to a suitable scale the sectional plan front elevation and cross section of a sample plate girder from the following given data:

Clear Span = 12.0m

Web plate = 1000x12mm thick.

Top and bottom Hange cover plate = 300mm x 12mm thick

Flange angle = 4-ISA 90x90x10mm.

Bearing plate = 200x300x20mm

Concrete block = 300x300x200mm

Diameter of rivets = 20mm.

Q.29 Draw a suitable scale front elevation and side elevation of a tunnel beam to beam connection. The main beam has two radiating beams connected to its web. The top of all the beams is at same level.

Main beam = ISMB 600@1202.7 μ /m

Secondary beams = ISLB 300 @369.8 μ /m

Cleat angles = 90x90x10mm

Nominal diameter of rivets = 20mm.