SLR-BD-9

Seat No.	

Set P

F.Y. (B. Tech) (Sem-II) (New) (NEP CBCS) Examination: March/April-2025
Basics of Civil and Mechanical Engineering (BTCE0204/ BTME0204/ BTETE0204/ BTCSE0204/ BTEE0204)/ (BTECE0204)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable single memory calculator is allowed.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Multiple Choice Questions. **07**

1) The process of killing the infective bacteria from the water and making it safe to the user is called _____.
a) Softening b) Disinfection
c) Coagulation d) Flocculation

2) Following sub branch of Civil Engineering is related with supply of water to crops.
a) Irrigation b) Environmental Engineering
c) Foundation Engineering d) Soil Mechanics

3) Portion of structure between ground level and floor level is called as _____.
a) Plinth b) Superstructure
c) Substructure d) None of the above

4) GPS stand for _____.
a) Government Public System
b) Global Positioning System
c) Global Police System
d) Geographic Positioning Sharing

5) Green buildings are recommended to _____.
a) Use green color b) Use farm house
c) Reduce global warming d) Achieve economy

6) A point on which both fore sight and back sight readings are taken is known as ____.

a) Change point
b) Fore sight point
c) Back sight point
d) None of the above

7) Following is the branch of Civil Engineering _____.

a) Mechanical Engineering
b) Electrical Engineering
c) Environmental Engineering
d) None of these

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct answer. **07**

1) Pressure cooker is _____ system.
a) open system b) close system
c) Isolated system d) Adiabatic System

2) The devices, pumps, compressor, refrigerators, air conditioners which require input energy for their operation are called _____.
a) power absorbing devices
b) power producing devices
c) power transferring devices
d) none

3) It is impossible to construct a heat engine which operates in a cycle produces no effect except production of work & exchange of heat with single reservoir.
a) Kelvin plank law b) Clausius law
c) Carnot theorem d) None

4) Which of the following is sliding part of lathe?
a) Headstock b) Tailstock
c) Both a and b d) None of these

5) Generally sheet metals are welded by following joining process _____.
a) Arc welding b) Spot welding
c) TIG welding d) None of these

6) The coefficient of friction in belt drive depends upon _____.
a) material of belt b) material of pulley
c) materials of belt and pulley d) belt velocity

7) Which of the following is not an extensive property of a thermodynamic system?
a) total mass b) total volume
c) total internal energy d) temperature

SLR-BD-9

Seat No.	

Set P

F.Y. (B. Tech) (Sem-II) (New) (NEP CBCS) Examination: March/April-2025
Basics of Civil and Mechanical Engineering (BTCE0204/ BTME0204/ BTETE0204/ BTCSE0204/ BTEE0204)/ (BTECE0204)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.2 and Q.No.4 are short answer type questions.
2) Q.No.3 and Q.No.5 are long answer type questions.
3) Use of non-programmable single memory calculator is allowed.
4) Assume suitable data if required.

Section - I

Q.2 Answer any FIVE of the following. **15**

a) Which are the sub branches of civil engineering? Describe anyone. **03**

b) Write note on rain water harvesting. **03**

c) State the unit operations of water treatment plant & explain aeration. **03**

d) Explain the relevance of Civil Engineering branch with Mechanical engineering. **03**

e) State the function of following: **03**
i) Wall
ii) Chajja
iii) Lintel

f) State and explain classification of Solid waste. **03**

g) Explain the application of Remote Sensing Technique. **03**

Q.3 Solve any one out of (a) and (b) and solve any two out of (c) to (f). **13**

a) Following readings were taken with dumpy level: **05**
1.580, 0.635, 2.035, 1.765, 1.660, 0.925, 1.035, 1.960.
The instrument was shifted after third and fifth reading. The RL of first point was 950.000 m. Calculate the RL's of all other points by Rise and Fall method and apply check.

b) The following reading were taken with dumpy level and a 4m staff at every 20 m. 1.360, 1.745, 1.920, 0.970, 1.860, 2.340, 2.675, 1.895, 2.415, 2.630, 1.970, 2.320. The instrument was shifted after 3rd, 7th and 10th reading. The RL of first point was 170.000 m. Calculate the RL's of all other points by Height of Instrument method and apply check. **05**

c) Differentiate between load bearing structure & framed structure. **04**

d) Explain principles of surveying. **04**

e) Write a note on green building. **04**

f) State the classification of survey. **04**

Section – II

Q.2 Answer any FIVE of the following. **15**

a) Explain with neat sketch Centrifugal pump.

b) Derive an expression for velocity of fluid at the exit of nozzle, by applying Steady Flow Energy Equation (SFEE).

c) Explain Thermodynamic Property and its Types.

d) State and Explain Second law of Thermodynamics

e) What are the different modes of mechanical power transmission?

f) Difference between Flat Belt drive and V belt drive.

g) Compare Electrical Arc welding with Electrical resistance welding.

Q.3 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Explain with neat sketch oxyacetylene welding. **05**

b) A cross belt connects two pulleys of 50 cm and 90 cm radius. The distance between shafts is 2 m. The initial tension in the belt is 700 N. If the coefficient of friction between belt and pulley is 0.3. Find the power transmitted if the smaller pulley rotates at 800 rpm. Also calculate the length of the belt. **05**

c) Explain with neat sketch Reciprocating Compressor. **04**

d) A system undergoes a cycle consisting of 3 Processes. The heat and work transfer are tabulated below. Determine the change in internal energy for each process. **04**

Process	Q (KJ)	W (KJ)	dU (KJ)
a-b	1800	520	-
b-c	-1400	0	-
c-d	-800	-325	-
d-a	1020	50	-

e) Sketch and describe in brief pillar drilling machine. **04**

f) Explain lathe machines operations with neat sketch. **04**

SLR-JE-705

Seat No.		Set	P

F.Y. (B.Tech.) (Sem - I) (New) (NEP CBCS) Examination: March/April-2024
Basics of Civil and Mechanical Engineering
(BTCE0104)/ (BTCSE0104) / (BTETE0104)/ (BTEE0104)/ (BTME0104)

Day & Date: Wednesday, 29-05-2024 Max. Marks: 70
Time: 10:00 AM To 1:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if necessary and mention them clearly.
5) Use of non-programmable single memory calculator is allowed.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following. **07**

1) Following is the sub branch of Civil Engineering deals with air pollution and water supply _____.
a) Geotechnical Engineering b) Environmental Engineering
c) Transportation Engineering d) Structural Engineering

2) For removal of Floating matters like leaves, dead animals, which treatment process is used?
a) Softening b) Sedimentation
c) None of these d) Screening

3) The method of surveying used for determining the relative heights of points on the surface of the earth is called _____.
a) Levelling b) Simple levelling
c) Longitudinal levelling d) Differential levelling

4) Which of the following vehicle is used for collecting solid waste from narrow localities _____.
a) Auto rickshaw b) Trailers
b) Truck d) None of the above

5) The lowermost part of a structure which transmits the load to the soil is known as _____.
a) Superstructure b) Plinth
c) Foundation d) Basement

6) "A powerful set of tools for collecting, retrieving at well, transforming and displaying spatial data from the real world for a particular set of purpose" is called as _____.
a) Geo-technology b) GIS
c) GPS d) Geoinformatics

7) Green city concept encourages _____.

a) Mass transportation
b) Pollution free city
c) Use of non conventional energy
d) All the above

Section – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) _____ is a device which lifts or transfers liquids from low level to high level at the expense of power input.

a) Pumps b) Turbines
c) Compressors d) None

2) Which of the following operations can be performed by a drilling machine?

a) spot facing b) Reaming
c) Tapping d) all of these

3) In spot welding, the tip of electrode is of _____.

a) Stainless steel b) Copper
c) Aluminum d) Brass

4) When two pulleys of different diameters are connected by mean of an open belt, the angle of contact considered must be on the _____.

a) smaller pulley b) large pulley
c) average of two pulleys d) none of the above

5) Gears used to connect two non-parallel and intersecting shafts at right angles to each other.

a) Spiral gears b) Spur gears
c) Bevel gears d) Helical gears

6) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is ____.

a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

7) It is impossible to construct a device which operating in a cycle will produce no effect other than the transfer of heat from a colder body to hotter body.

a) Kelvin plank law b) Clausius law
c) Carnot theorem d) none

SLR-JE-705

Seat No.		Set	P

F.Y. (B.Tech.) (Sem - I) (New) (NEP CBCS) Examination: March/April-2024
Basics of Civil and Mechanical Engineering
(BTCE0104)/ (BTCSE0104) / (BTETE0104)/ (BTEE0104)/ (BTME0104)

Day & Date: Wednesday, 29-05-2024 Max. Marks: 56
Time: 10:00 AM To 1:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed and mention it clearly.
4) Use of non-programmable single memory calculator is allowed.
5) Q.No.2 and Q.No.4 are short answer type question.
6) Q.No.3 and Q.No.5 are long answer type question.

Section – I

Q.2 Attempt any Five. **15**

a) Explain application of Civil Engineering to Textile Engineering. **03**

b) Explain Rain Water Harvesting with neat sketch. **03**

c) Define Civil Engineering? Enlist sub branches of civil engineering? Explain any one in short. **03**

d) Draw a functional cross section of road in embankment. **03**

e) What is GIS? Give its applications in various fields. **03**

f) Explain Operation of Water treatment plant. **03**

g) Write note on Hydrological cycle. **03**

Q.3 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) The following consecutive readings were taken with a dumpy level. **05**
1.580, 0.635, 2.035, 1.765,1.660,0.925,1.035, 1.960. The level was shifted after 3rd and 5th readings. The first reading was taken on the bench mark of RL 950.000. Calculate the reduced levels of the change points and the difference of level between first and last points. (Use Rise and Fall method.)

b) During levelling following staff readings are taken, **05**
Reading taken successively on staff position in a levelling work are 2.065, 1.470, 1.250, 3.195, 2.455. Level was shifted after second reading. If R. L. of first position of staff is 250.00M, find R.L. of other staff positions. Use rise and fall method. Show arithmetical check and sample calculation.

c) What is the classification of foundation? Explain any one in details. **04**

d) Differentiate between Load bearing structure and Framed structure. **04**

e) Draw a neat sketch of showing all parts of super structure and sub-structure. **04**

f) Explain the classification of road transport. **04**

Section – II

Q.4 Answer any five of the following. **15**

a) Distinguish between Rotary Compressor and Reciprocating Compressor. **03**

b) Explain working of Kaplan Turbine. **03**

c) Explain Brazing process with neat sketch. **03**

d) State and explain the second law of thermodynamics. **03**

e) Write short notes on **03**

i) Spur Gear

ii) Bevel gear

f) Explain PdV work in detail **03**

g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE, **03**

Q.5 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two pulleys having diameters 2m and 1.5 m are separated by a distance of 5 m. the initial tension in the belt is 3kN. The coefficient of friction between the belt and the pulley is 0.3. Calculate the power transmitted by the open belt, when the smaller pulley rotates at 200 rpm. **05**

b) Describe Lathe Machine with its neat Sketch. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q (KJ)	W (KJ)	ΔU (KJ)
1-2	+80	+30	---
2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch construction & working of Centrfugal Pump. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Explain Oxy-Acetylene Gas welding in detail. **04**

SLR-JE-709

Seat No.	

Set P

F. Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April-2024
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternative from the options and rewrite the sentence. 07

1) The reduced level of finished surface of earth is known as _____.
a) Formation Level b) Kerb
c) Right of Way d) Side drain

2) Construction of transmission towers is the relevance of Civil engineering with ____.
a) Computer Engineering b) Mechanical Engineering
c) IT Engineering d) Electrical Engineering

3) Substructure consists of _____.
a) Foundation b) Window
c) Parapet d) All above

4) Salient features of a green building are _____.
a) Minimal disturbance to landscapes and site condition
b) Use of recycled and environmental friendly building materials
c) Use of non-toxic and recycled / recyclable materials / energy efficient and co-friendly equipment
d) All of the above

5) Hardware, software, data and people, these are components of ____.
a) GPS b) RS
c) GIS d) Total station

6) Rain water harvesting in required for _____.
a) Ground water table recharge b) Bore-well recharge
c) Storage for future use d) All the above

7) When two or more footings are connected by a beam then it is called as _____.
a) Beam footing b) Combined footing
c) Strap footing d) Mat footing

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **07**

1) The pump transfers the mechanical energy of a motor or of an engine into _____ of a fluid.
a) Pressure energy
b) kinetic energy
c) Either pressure energy or kinetic energy
d) pressure energy, kinetic energy or both

2) In which of the following welding process, electrodes get consumed _____.
a) TIG welding b) Resistance welding
c) Thermit welding d) Arc welding

3) The part of carriage which guides along guide ways of lathe bed is called _____.
a) Apron b) Tool post
c) saddle d) Cross slide

4) The process of removing material from the face of work piece is called _____.
a) Facing b) Chamfering
c) Knurling d) None of these

5) Method of joining two work pieces made of dissimilar material by heating above 450^{o} C and below melting point is called _____.
a) Welding b) Brazing
c) Soldering d) None of these

6) Which of the following is an intensive property of a thermodynamic system?
a) Volume b) Temperature
c) Mass d) Energy

7) Internal energy is defined by _____.
a) Zeroth law of thermodynamics
b) First law of thermodynamics
c) Second law of thermodynamics
d) Law of entropy

Seat No.	

Set **P**

F. Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April-2024
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 15-05-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 & Q. 4 are short answer type questions.
2) Q. 3 and Q. 5 are long answer type questions.
3) Neat diagram must be drawn whenever necessary.
4) Figures to the right indicates full marks.
5) Assume additional suitable data if necessary and state it clearly.
6) Use of log tables and non-programmable single memory calculator is allowed.

Section – I

Q.2 Attempt any five of the following questions. **15**

a) What are the sub branches of civil engineering? Explain any one in short.
b) Explain the various sources of water in detail.
c) Draw the cross section of concrete dam and show various levels.
d) Differentiate between shallow foundation and deep foundation with suitable examples.
e) Explain the Indore method of composting.
f) Write any three applications of GIS.
g) What are the objectives of carrying out surveying?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in cutting. **05**
b) Explain Effluent Treatment plant. **05**
c) With neat sketch explain any two types of shallow foundation. **04**
d) Write note on Principle of surveying. **04**
e) Write the difference between GIS and GPS. **04**
f) What is bridge? Write the classification of Bridges. **04**

Instructions: 1) Use of scientific calculator is allowed.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.

Section – II

Q.2 Attempt any three. **12**

a) Explain construction and working of Reciprocating Pump with neat sketch.
b) Explain Pelton Turbine with neat sketch.
c) Explain metal arc welding with neat sketch.
d) Explain basic elements of Drilling machine.

Q.3 Attempt any two. **10**

a) Derive an equation to calculate length of Open Belt Drive.
b) Describe steady flow energy equation.
c) Explain oxy acetylene welding.

Q.4 Attempt any one. **06**

a) A cycle consists of three processes. The energy transfer in each process is tabulated below Complete the table & determines the network of cycle.

Process	Q (kw)	W(Kw)	ΔU(Kw)
1-2	50	-	20
2-3	-30	-40	-
3-1	-	-	-30

b) Describe Lathe Machine with its block diagram

SLR-WF-492

Seat No.	

Set P

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) _____is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

2) The process of purifying water by passing it through a bed of fine granular material, is called ____.
a) screening b) filtration
c) coagulation d) sedimentation

3) When the pH value of water is _____ the water is said to be acidic
a) Equal to 7 b) less than 7
c) more than 7 d) 10

4) The function of lintel is _____.
a) To protect from rain and sun rays
b) To transfer load of wall above openings or side walls
c) To protect from capillary water
d) To transfer load of superstructure on foundation

5) The function of parapet is _____.
a) beautification b) protection to terrace users
c) storage of rain water d) All above

6) Hydrographic surveys deal with the mapping of _____.
a) Heavenly bodies b) Hills
c) Large water bodies d) Canal system

7) GIS means _____
a) Geographic information system
b) Geological information *system*
c) Geometrical information system
d) None of this

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) As per sign convention, heat going out of system to surrounding is treated as _____.
a) positive b) Negative
c) Neglected d) None

2) Work is a _____.
a) point function b) path function
c) Depends on state d) None

3) For low head and high discharge which pump is used ____.
a) centrifugal pump b) Reciprocating pump
c) Vane pump d) None

4) Reciprocating pump is a _____.
a) Negative displacement pump b) Positive displacement pump
c) Diaphragm pump d) Emulsion pump

5) End of workpiece can be supported by using _____.
a) Headstock b) Tailstock
c) Toolpost d) None of above

6) Which one of the following is the simplest type of resistance welding used in making lap welds?
a) Resistance spot b) Resistance seam
c) Projection d) Upset

7) In which of the following drives, there is no slip?
a) Open belt drive b) Cross belt drive
c) Chain drive d) Rope drive

SLR-WF-492

Seat No.	

Set P

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Neat diagram must be drawn whenever necessary.
3) Use of log tables and non-programmable single memory calculator is Allowed.

Section – I

Q.2 Attempt any five of the following questions. **15**

a) What are various roles of Civil Engineer in Construction activities?
b) With neat sketch explain any two types of shallow foundation.
c) Draw a neat sketch of concrete gravity dam.
d) Write a short note on “Green Building”.
e) Explain methods of disposal of waste.
f) Write any three applications of GIS.
g) What are the objectives of carrying out surveying?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in Embankment. **05**
b) Draw a neat sketch to show various structural components of a building. **05**
c) Enlist various stages involved in the water treatment plant. **04**
d) What is Remote-Sensing? Give its applications in various fields. **04**
e) Write the difference between Road Transport and Rail Transport. **04**
f) Define solid waste? Explain Municipal Solid Waste. **04**

Section – II

Q.2 Attempt any Five. **15**

a) Explain working of vane blower with sketch.
b) Write a note on Francis turbine with neat sketch.
c) Differentiate between soldering and brazing.
d) State the types of system explain any one with example
e) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.
f) State the limitations of first law of thermodynamics.
g) Write short notes on epicyclic gear train.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two pulleys, one 450 mm diameter and the other 200 mm diameter, on parallel shafts 1.95 m apart are connected by a crossed belt. Find the length of the belt required and the angle of contact between the belt and each pulley. What power can be transmitted by the belt when the larger pulley rotates at 200 rev/min, if the maximum permissible tension in the belt is 1 kN, and the coefficient of friction between the belt and pulley is 0.25? **05**

b) Describe Pillar drilling Machine with its block diagram. **05**

c) A system undergoes a cycle consisting of 4 processes. The heat and work transfer are tabulated below. **04**
Prove that, the table is consistent with first law of thermodynamics.
Determine the change in internal energy for each process.

Process	Q. (KJ)	W(KJ)	dU (KJ)
1-2	1700	495	
2-3	-1600	0	
3-4	-900	-295	
4-1	1040	9	

d) Explain with neat sketch working of Kaplan turbine. **04**
e) Sketch and explain Oxy-acetylene welding. **04**
f) Derive an expression for length of belt for cross belt drive. **04**

SLR-WF-492

Seat No.	

Set Q

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) _____ is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

2) The process of purifying water by passing it through a bed of fine granular material, is called ____.
a) screening b) filtration
c) coagulation d) sedimentation

3) When the pH value of water is _____ the water is said to be acidic
a) Equal to 7 b) less than 7
c) more than 7 d) 10

4) The function of lintel is _____.
a) To protect from rain and sun rays
b) To transfer load of wall above openings or side walls
c) To protect from capillary water
d) To transfer load of superstructure on foundation

5) The function of parapet is _____.
a) beautification b) protection to terrace users
c) storage of rain water d) All above

6) Hydrographic surveys deal with the mapping of _____.
a) Heavenly bodies b) Hills
c) Large water bodies d) Canal system

7) GIS means _____
a) Geographic information system
b) Geological information *system*
c) Geometrical information system
d) None of this

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) As per sign convention, heat going out of system to surrounding is treated as _____.
a) positive b) Negative
c) Neglected d) None

2) Work is a _____.
a) point function b) path function
c) Depends on state d) None

3) For low head and high discharge which pump is used ____.
a) centrifugal pump b) Reciprocating pump
c) Vane pump d) None

4) Reciprocating pump is a _____.
a) Negative displacement pump b) Positive displacement pump
c) Diaphragm pump d) Emulsion pump

5) End of workpiece can be supported by using _____.
a) Headstock b) Tailstock
c) Toolpost d) None of above

6) Which one of the following is the simplest type of resistance welding used in making lap welds?
a) Resistance spot b) Resistance seam
c) Projection d) Upset

7) In which of the following drives, there is no slip?
a) Open belt drive b) Cross belt drive
c) Chain drive d) Rope drive

SLR-WF-492

Seat No.	

Set Q

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Neat diagram must be drawn whenever necessary.
3) Use of log tables and non-programmable single memory calculator is Allowed.

Section – I

Q.2 Attempt any five of the following questions. **15**

a) What are various roles of Civil Engineer in Construction activities?
b) With neat sketch explain any two types of shallow foundation.
c) Draw a neat sketch of concrete gravity dam.
d) Write a short note on “Green Building”.
e) Explain methods of disposal of waste.
f) Write any three applications of GIS.
g) What are the objectives of carrying out surveying?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in Embankment. **05**
b) Draw a neat sketch to show various structural components of a building. **05**
c) Enlist various stages involved in the water treatment plant. **04**
d) What is Remote-Sensing? Give its applications in various fields. **04**
e) Write the difference between Road Transport and Rail Transport. **04**
f) Define solid waste? Explain Municipal Solid Waste. **04**

Section – II

Q.2 Attempt any Five. **15**

a) Explain working of vane blower with sketch.
b) Write a note on Francis turbine with neat sketch.
c) Differentiate between soldering and brazing.
d) State the types of system explain any one with example
e) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.
f) State the limitations of first law of thermodynamics.
g) Write short notes on epicyclic gear train.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two pulleys, one 450 mm diameter and the other 200 mm diameter, on parallel shafts 1.95 m apart are connected by a crossed belt. Find the length of the belt required and the angle of contact between the belt and each pulley. What power can be transmitted by the belt when the larger pulley rotates at 200 rev/min, if the maximum permissible tension in the belt is 1 kN, and the coefficient of friction between the belt and pulley is 0.25? **05**

b) Describe Pillar drilling Machine with its block diagram. **05**

c) A system undergoes a cycle consisting of 4 processes. The heat and work transfer are tabulated below. **04**
Prove that, the table is consistent with first law of thermodynamics.
Determine the change in internal energy for each process.

Process	Q. (KJ)	W(KJ)	dU (KJ)
1-2	1700	495	
2-3	-1600	0	
3-4	-900	-295	
4-1	1040	9	

d) Explain with neat sketch working of Kaplan turbine. **04**
e) Sketch and explain Oxy-acetylene welding. **04**
f) Derive an expression for length of belt for cross belt drive. **04**

SLR-WF-492

Seat No.		Set	R

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) _____is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

2) The process of purifying water by passing it through a bed of fine granular material, is called ____.
a) screening b) filtration
c) coagulation d) sedimentation

3) When the pH value of water is _____ the water is said to be acidic
a) Equal to 7 b) less than 7
c) more than 7 d) 10

4) The function of lintel is _____.
a) To protect from rain and sun rays
b) To transfer load of wall above openings or side walls
c) To protect from capillary water
d) To transfer load of superstructure on foundation

5) The function of parapet is _____.
a) beautification b) protection to terrace users
c) storage of rain water d) All above

6) Hydrographic surveys deal with the mapping of _____.
a) Heavenly bodies b) Hills
c) Large water bodies d) Canal system

7) GIS means _____
a) Geographic information system
b) Geological information *system*
c) Geometrical information system
d) None of this

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) As per sign convention, heat going out of system to surrounding is treated as _____.
a) positive b) Negative
c) Neglected d) None

2) Work is a _____.
a) point function b) path function
c) Depends on state d) None

3) For low head and high discharge which pump is used ____.
a) centrifugal pump b) Reciprocating pump
c) Vane pump d) None

4) Reciprocating pump is a _____.
a) Negative displacement pump b) Positive displacement pump
c) Diaphragm pump d) Emulsion pump

5) End of workpiece can be supported by using _____.
a) Headstock b) Tailstock
c) Toolpost d) None of above

6) Which one of the following is the simplest type of resistance welding used in making lap welds?
a) Resistance spot b) Resistance seam
c) Projection d) Upset

7) In which of the following drives, there is no slip?
a) Open belt drive b) Cross belt drive
c) Chain drive d) Rope drive

SLR-WF-492

Seat No.	

Set R

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Neat diagram must be drawn whenever necessary.
3) Use of log tables and non-programmable single memory calculator is Allowed.

Section – I

Q.2 Attempt any five of the following questions. **15**

a) What are various roles of Civil Engineer in Construction activities?
b) With neat sketch explain any two types of shallow foundation.
c) Draw a neat sketch of concrete gravity dam.
d) Write a short note on “Green Building”.
e) Explain methods of disposal of waste.
f) Write any three applications of GIS.
g) What are the objectives of carrying out surveying?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in Embankment. **05**
b) Draw a neat sketch to show various structural components of a building. **05**
c) Enlist various stages involved in the water treatment plant. **04**
d) What is Remote-Sensing? Give its applications in various fields. **04**
e) Write the difference between Road Transport and Rail Transport. **04**
f) Define solid waste? Explain Municipal Solid Waste. **04**

Section – II

Q.2 Attempt any Five. **15**

a) Explain working of vane blower with sketch.
b) Write a note on Francis turbine with neat sketch.
c) Differentiate between soldering and brazing.
d) State the types of system explain any one with example
e) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.
f) State the limitations of first law of thermodynamics.
g) Write short notes on epicyclic gear train.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two pulleys, one 450 mm diameter and the other 200 mm diameter, on parallel shafts 1.95 m apart are connected by a crossed belt. Find the length of the belt required and the angle of contact between the belt and each pulley. What power can be transmitted by the belt when the larger pulley rotates at 200 rev/min, if the maximum permissible tension in the belt is 1 kN, and the coefficient of friction between the belt and pulley is 0.25? **05**

b) Describe Pillar drilling Machine with its block diagram. **05**

c) A system undergoes a cycle consisting of 4 processes. The heat and work transfer are tabulated below. **04**
Prove that, the table is consistent with first law of thermodynamics.
Determine the change in internal energy for each process.

Process	Q. (KJ)	W(KJ)	dU (KJ)
1-2	1700	495	
2-3	-1600	0	
3-4	-900	-295	
4-1	1040	9	

d) Explain with neat sketch working of Kaplan turbine. **04**
e) Sketch and explain Oxy-acetylene welding. **04**
f) Derive an expression for length of belt for cross belt drive. **04**

SLR-WF-492

Seat No.		Set	S

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) _____is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

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a) screening b) filtration
c) coagulation d) sedimentation

3) When the pH value of water is _____ the water is said to be acidic
a) Equal to 7 b) less than 7
c) more than 7 d) 10

4) The function of lintel is _____.
a) To protect from rain and sun rays
b) To transfer load of wall above openings or side walls
c) To protect from capillary water
d) To transfer load of superstructure on foundation

5) The function of parapet is _____.
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6) Hydrographic surveys deal with the mapping of _____.
a) Heavenly bodies b) Hills
c) Large water bodies d) Canal system

7) GIS means _____
a) Geographic information system
b) Geological information *system*
c) Geometrical information system
d) None of this

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 07

1) As per sign convention, heat going out of system to surrounding is treated as _____.
a) positive b) Negative
c) Neglected d) None

2) Work is a _____.
a) point function b) path function
c) Depends on state d) None

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c) Vane pump d) None

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c) Toolpost d) None of above

6) Which one of the following is the simplest type of resistance welding used in making lap welds?
a) Resistance spot b) Resistance seam
c) Projection d) Upset

7) In which of the following drives, there is no slip?
a) Open belt drive b) Cross belt drive
c) Chain drive d) Rope drive

SLR-WF-492

Seat No.	

Set S

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: March/April-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Wednesday, 12-07-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Neat diagram must be drawn whenever necessary.
3) Use of log tables and non-programmable single memory calculator is Allowed.

Section – I

Q.2 Attempt any five of the following questions. **15**

a) What are various roles of Civil Engineer in Construction activities?
b) With neat sketch explain any two types of shallow foundation.
c) Draw a neat sketch of concrete gravity dam.
d) Write a short note on “Green Building”.
e) Explain methods of disposal of waste.
f) Write any three applications of GIS.
g) What are the objectives of carrying out surveying?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in Embankment. **05**
b) Draw a neat sketch to show various structural components of a building. **05**
c) Enlist various stages involved in the water treatment plant. **04**
d) What is Remote-Sensing? Give its applications in various fields. **04**
e) Write the difference between Road Transport and Rail Transport. **04**
f) Define solid waste? Explain Municipal Solid Waste. **04**

Section – II

Q.2 Attempt any Five. **15**

a) Explain working of vane blower with sketch.
b) Write a note on Francis turbine with neat sketch.
c) Differentiate between soldering and brazing.
d) State the types of system explain any one with example
e) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.
f) State the limitations of first law of thermodynamics.
g) Write short notes on epicyclic gear train.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two pulleys, one 450 mm diameter and the other 200 mm diameter, on parallel shafts 1.95 m apart are connected by a crossed belt. Find the length of the belt required and the angle of contact between the belt and each pulley. What power can be transmitted by the belt when the larger pulley rotates at 200 rev/min, if the maximum permissible tension in the belt is 1 kN, and the coefficient of friction between the belt and pulley is 0.25? **05**

b) Describe Pillar drilling Machine with its block diagram. **05**

c) A system undergoes a cycle consisting of 4 processes. The heat and work transfer are tabulated below. **04**
Prove that, the table is consistent with first law of thermodynamics.
Determine the change in internal energy for each process.

Process	Q. (KJ)	W(KJ)	dU (KJ)
1-2	1700	495	
2-3	-1600	0	
3-4	-900	-295	
4-1	1040	9	

d) Explain with neat sketch working of Kaplan turbine. **04**
e) Sketch and explain Oxy-acetylene welding. **04**
f) Derive an expression for length of belt for cross belt drive. **04**

SLR-HL-403

Seat No.	

Set | **P**

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Following is not a branch of civil engineering
a) Transportation Engineering b) Data Structure
c) Structural Engineering d) Hydraulic Engineering

2) What is rain water harvesting?
a) Collection and storage of used water
b) Collection and storage of Rainwater
c) Distribution of water
d) None of the above

3) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

4) The portion of the building between Ground level and Ground floor is called
a) Foundation b) Plinth
c) Wall d) Lintel

5) Which of the following is a classification based on the nature of the field survey?
a) Topographic surveying b) Mine surveying
c) Military surveying d) Chain surveying

6) D.P.C (Damp Proof Course) is mainly laid on
a) Plinth b) Floor
c) Foundation d) Footing

7) Which of the following is the first principle of surveying?
a) Whole to whole b) Whole to part
c) Part to part d) Part to whole

8) The devices, like compressors and pumps which require energy input for their operation are called _____.
a) Power absorbing devices b) Power producing devices
c) Power transferring devices d) Power fulfilling devices

9) Which of the following is a general-purpose machine tools
a) Milling b) Lathe
c) Drilling d) Cutting

10) A welding process definitely needs following input
a) Heat b) Pressure
c) Filler material d) Coolant

11) The pulley fixed on the shaft of a prime mover known as
a) Driver pulley b) Driven pulley
c) Jockey pulley d) Cone pulley

12) Gears used to connect two non-parallel and intersecting shafts at right angles to each other.
a) Spiral gears b) Spur gears
c) Bevel gears d) Helical gears

13) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the net work transfer the cycle is
a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

14) A system comprising of a single phase, is known as
a) Open system b) Closed system
c) Heterogeneous system d) Homogeneous system

SLR-HL-403

Seat No.	

Set P

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 & Q. 4 are short answer type questions.
2) Q. 3 and Q. 5 are long answer type questions.
3) Neat diagram must be drawn whenever necessary.
4) Use of log tables and non-programmable single memory calculator is Allowed.

Section – I

Q.2 Attempt any Five. **15**

a) Write the Significance of any one subdomains of Civil engineering.
b) Enlist various stages involved in the water treatment plant.
c) Draw Typical Functional Cross Section of Road and also give label to each part of cross section.
d) Write short note on rain water harvesting.
e) Explain the concept of green building.
f) Write any three applications of GIS.
g) Write note on fire safety measures of building.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Differentiate between Load bearing and Framed structure. **05**
b) Explain various stages involved in effluent treatment plant. **05**
c) Write note on classification of Road. **04**
d) Write note on classification of surveying. **04**
e) Explain various application of Remote sensing. **04**
f) Differentiate between Plane Surveying and Geodetic Surveying. **04**

Section – II

Q.4 Attempt any Five. **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on construction of a Pelton wheel with its diagram.
c) What is Brazing process? Explain with neat sketch.
d) State and explain the first law of thermodynamics in case of an open system.
e) **Write short notes on**
1) Compound gear train
2) Simple gear train
f) **Write a note on**
1) Zeroth law of thermodynamic
2) Open and closed systems
g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.

Q.5 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two parallel shafts, which have center distance between them 8 m. They are connected by crossed belt drive. The diameter of driver pulley is 800 mm and diameter of driven pulley is 600 mm. The direction of rotation of driven is need to be reversed by changing over an open belt drive. Calculate the length of both open and crossed belt drive and state can same belt be applied in changed arrangement? If not, then what will be the solution to fix the belt in open belt drive? **05**

b) Describe Lathe Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q(KJ)	W (KJ)	ΔU (KJ)
1-2	+80	+30	---
2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch working of Kaplan turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine. **04**

SLR-HL-403

Seat No.	

Set Q

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The devices, like compressors and pumps which require energy input for their operation are called _____.
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2) Which of the following is a general-purpose machine tools
a) Milling b) Lathe
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3) A welding process definitely needs following input
a) Heat b) Pressure
c) Filler material d) Coolant

4) The pulley fixed on the shaft of a prime mover known as
a) Driver pulley b) Driven pulley
c) Jockey pulley d) Cone pulley

5) Gears used to connect two non-parallel and intersecting shafts at right angles to each other.
a) Spiral gears b) Spur gears
c) Bevel gears d) Helical gears

6) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the net work transfer the cycle is
a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

7) A system comprising of a single phase, is known as
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SLR-HL-403

Seat No.	

Set Q

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 & Q. 4 are short answer type questions.
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3) Neat diagram must be drawn whenever necessary.
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Section – I

Q.2 Attempt any Five. **15**

a) Write the Significance of any one subdomains of Civil engineering.
b) Enlist various stages involved in the water treatment plant.
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f) Write any three applications of GIS.
g) Write note on fire safety measures of building.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Differentiate between Load bearing and Framed structure. **05**
b) Explain various stages involved in effluent treatment plant. **05**
c) Write note on classification of Road. **04**
d) Write note on classification of surveying. **04**
e) Explain various application of Remote sensing. **04**
f) Differentiate between Plane Surveying and Geodetic Surveying. **04**

Section – II

Q.4 Attempt any Five. **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on construction of a Pelton wheel with its diagram.
c) What is Brazing process? Explain with neat sketch.
d) State and explain the first law of thermodynamics in case of an open system.
e) **Write short notes on**
1) Compound gear train
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f) **Write a note on**
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2) Open and closed systems
g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.

Q.5 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

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c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q(KJ)	W (KJ)	ΔU (KJ)
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2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch working of Kaplan turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine. **04**

SLR-HL-403

Seat No.	

Set R

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The pulley fixed on the shaft of a prime mover known as
a) Driver pulley b) Driven pulley
c) Jockey pulley d) Cone pulley

2) Gears used to connect two non-parallel and intersecting shafts at right angles to each other.
a) Spiral gears b) Spur gears
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a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

4) A system comprising of a single phase, is known as
a) Open system b) Closed system
c) Heterogeneous system d) Homogeneous system

5) Following is not a branch of civil engineering
a) Transportation Engineering b) Data Structure
c) Structural Engineering d) Hydraulic Engineering

6) What is rain water harvesting?
a) Collection and storage of used water
b) Collection and storage of Rainwater
c) Distribution of water
d) None of the above

7) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

8) The portion of the building between Ground level and Ground floor is called
a) Foundation b) Plinth
c) Wall d) Lintel

9) Which of the following is a classification based on the nature of the field survey?

a) Topographic surveying b) Mine surveying
c) Military surveying d) Chain surveying

10) D.P.C (Damp Proof Course) is mainly laid on

a) Plinth b) Floor
c) Foundation d) Footing

11) Which of the following is the first principle of surveying?

a) Whole to whole b) Whole to part
c) Part to part d) Part to whole

12) The devices, like compressors and pumps which require energy input for their operation are called _____.

a) Power absorbing devices b) Power producing devices
c) Power transferring devices d) Power fulfilling devices

13) Which of the following is a general-purpose machine tools

a) Milling b) Lathe
c) Drilling d) Cutting

14) A welding process definitely needs following input

a) Heat b) Pressure
c) Filler material d) Coolant

SLR-HL-403

Seat No.	

Set R

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 & Q. 4 are short answer type questions.
2) Q. 3 and Q. 5 are long answer type questions.
3) Neat diagram must be drawn whenever necessary.
4) Use of log tables and non-programmable single memory calculator is Allowed.

Section – I

Q.2 Attempt any Five. **15**

a) Write the Significance of any one subdomains of Civil engineering.
b) Enlist various stages involved in the water treatment plant.
c) Draw Typical Functional Cross Section of Road and also give label to each part of cross section.
d) Write short note on rain water harvesting.
e) Explain the concept of green building.
f) Write any three applications of GIS.
g) Write note on fire safety measures of building.

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Differentiate between Load bearing and Framed structure. **05**
b) Explain various stages involved in effluent treatment plant. **05**
c) Write note on classification of Road. **04**
d) Write note on classification of surveying. **04**
e) Explain various application of Remote sensing. **04**
f) Differentiate between Plane Surveying and Geodetic Surveying. **04**

Section – II

Q.4 Attempt any Five. **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on construction of a Pelton wheel with its diagram.
c) What is Brazing process? Explain with neat sketch.
d) State and explain the first law of thermodynamics in case of an open system.
e) **Write short notes on**
1) Compound gear train
2) Simple gear train
f) **Write a note on**
1) Zeroth law of thermodynamic
2) Open and closed systems
g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE.

Q.5 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) Two parallel shafts, which have center distance between them 8 m. They are connected by crossed belt drive. The diameter of driver pulley is 800 mm and diameter of driven pulley is 600 mm. The direction of rotation of driven is need to be reversed by changing over an open belt drive. Calculate the length of both open and crossed belt drive and state can same belt be applied in changed arrangement? If not, then what will be the solution to fix the belt in open belt drive? **05**

b) Describe Lathe Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q(KJ)	W (KJ)	ΔU (KJ)
1-2	+80	+30	---
2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch working of Kaplan turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine. **04**

SLR-HL-403

Seat No.	

Set S

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) D.P.C (Damp Proof Course) is mainly laid on
a) Plinth b) Floor
c) Foundation d) Footing

2) Which of the following is the first principle of surveying?
a) Whole to whole b) Whole to part
c) Part to part d) Part to whole

3) The devices, like compressors and pumps which require energy input for their operation are called _____.
a) Power absorbing devices b) Power producing devices
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4) Which of the following is a general-purpose machine tools
a) Milling b) Lathe
c) Drilling d) Cutting

5) A welding process definitely needs following input
a) Heat b) Pressure
c) Filler material d) Coolant

6) The pulley fixed on the shaft of a prime mover known as
a) Driver pulley b) Driven pulley
c) Jockey pulley d) Cone pulley

7) Gears used to connect two non-parallel and intersecting shafts at right angles to each other.
a) Spiral gears b) Spur gears
c) Bevel gears d) Helical gears

8) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the net work transfer the cycle is
a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

9) A system comprising of a single phase, is known as
a) Open system b) Closed system
c) Heterogeneous system d) Homogeneous system

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SLR-HL-403

Seat No.	

Set S

F.Y. (B.Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2022
Basics of Civil and Mechanical Engineering

Day & Date: Friday, 17-03-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 & Q. 4 are short answer type questions.
2) Q. 3 and Q. 5 are long answer type questions.
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Section – I

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