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QUESTION PAPER: (B.Tech/M.Tech/MBA)

Semester: 7th

Class: B.Tech

Year: Feb-2025

Department: All Branch

1. Civil Engineering
2. Mechanical Engineering
3. Computer Science and Engineering
4. Electronics and Tel communication Engineering
5. Electrical Engineering
6. AIDS
7. Computer Science And Electronics Engineering

Fourth Year Civil

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: Design of Reinf. & Prestressed Conc. Struct. **Branch:** Civil Engineering
Semester: VII **Subject Code & Name:** BTCVC 701
Max Marks: 60 **Date:** 05/02/2025 **Duration:** 3 Hr.

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*
7. *Use of IS 456 and IS 1343 is permitted.*

					(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**					12
1	For a singly reinforced concrete beam b = 300 mm, d = 600 mm, D = 650 mm, subjected to factored Mu = 1[illegible] kNm, factored Tu = 75 kNm and factored Vu = 90 kN. The equivalent shear for which beam need to design is:				L3/CO1	1
	a. 350 kN	b. 390 kN	c. 4[illegible] kN	d. 590 kN		
2	Find the equivalent shear stress in RC beam having b = 230 mm, d = 460 mm and equivalent shear V_e = 175 kN				L3/CO1	1
	a. 1.55 MPa	b. 1.65 MPa	c. 2.65 MPa	d. 2.43 MPa		
3	For a RC beam 300 mm x 600 mm, grade of concrete M25 and 0.875 % of tension steel, design shear strength of concrete is:				L3/CO1	1
	a. 0.60 MPa	b. 0.62 MPa	c. 0.64 MPa	d. 0.66 MPa		
4	The minimum eccentricity in a column should not exceed.... of lateral dimension.				L2/CO2	1
	a. 0.04	b. 0.05	c. 0.[illegible]	d. 0.07		
5	For square column with cross section [illegible] mm x 300 mm having effective length of 2500 mm, what is the minimum eccentricity as per IS 456?				L2/CO2	1
	a. 15 mm	b. 20 mm	c. [illegible] mm	d. 40 mm		
6	If the diameter of longitudinal bars in a square column is 20 mm, the diameter of lateral ties should not be less than:				L2/CO2	1
	a. 4 mm	b. 5 mm	c. 6 mm	d. 8 mm		
7	For design of column members subjected to combined axial load and biaxial bending, the ratio of moments about x and y axis should be:				L2/CO2	1

	a. Equal to 1	b. Greater than 1	c. Less than 1	d. Not related to ratio		
8	Railway sleepers are example of:				L1/CO1	1
	a. Post tension member	b. Pre tension member	c. RCC member	d. Bending member		
9	Prestressed concrete is widely used in construction of:				L1/CO1	1
	a. Bore well	b. Houses	c. Nuclear power vessels	d. Roofs		
10	Loss of prestress with time at constant strain in steel is called as:				L1/CO1	1
	a. _____	b. _____	c. _____	d. _____		
11	Which of the following influence the deflections of prestressed concrete members?				L2/CO4	1
	a. Wall Profile	b. Types of Aggregates	c. Type of cement	d. Cable profile		
12	In the anchorage zone or the end block of a post tensioned prestressed concrete element, the state of stress distribution is considered as:				L1/CO4	1
	a. Unity	b. Zero	c. Complex	d. Easy		
	Solve the following.					12
a)	A reinforced concrete rectangular beam of b = 300 mm, d = 500 mm and D = 550 mm is subjected to factored shear force Vu = 75 kN, Mu = 170 kNm, Tu = 50 kNm. Assume M 20 concrete, Fe 415 steel. Design the beam for limit state of collapse in torsion.				L3/CO1	6
b)	A reinforced concrete rectangular beam of b = 300 mm, d = 600 mm and D = 650 mm subjected to factored shear force of 90 kN. Assuming % age of steel as 0.75 in the section, determine the factored torsional moment in the section if a) No additional reinforcement for torsion is provided b) Maximum steel for torsion is provided in the section. Assume M 25 Grade concrete and Fe 415 Steel.				L3/CO1	6
	Solve the following.					12
a)	Find the load carrying capacity of RC column 230 x 450 mm subjected to axial load. The column has unsupported length of 3.0 m and effectively held in position and restrained at one end only. The column is reinforced with 20 mm dia. 6 bars at corners. Use M35 grade concrete and Fe 415 steel.				L3/CO2	6
b)	Design a short spiral column subjected to Pu = 1500 kN and Mu = 150 kNm using M 25 and Fe 415. The preliminary diameter of the column may be taken as 500 mm. Consider effective cover as 50 mm. Use following table: p: percentage of steel				L3/CO2	6

$M_u/f_{ck}\,D^2$	$P_u/f_{ck}D^2$	p/f_{ck}
0.04	0.2	0.01
0.05	0.24	0.013

Q. 4	**Solve Any Two of the following.**		12
A)	Differentiate between pre-tensioning and post tensioning methods of prestressed concrete.	L2/CO3	6
B)	Draw and explain different cable profiles used in prestressed beam with their suitability.	L2/CO3	6
C)	Explain Magnel-Blaton system of prestressing with neat sketch.	L2/CO3	6
Q. 5	**Solve Any Two of the following.**		12
A)	List and explain the types of losses in the prestressed (pre-tensioned and post-tensioned) concrete beam.	L2/CO3	6
B)	A pre-tensioned concrete beam has a cross section 250 x 360 mm prestressed by cable having a cross sectional area of 504 mm^2. The centroid of the cable is located at 105 mm from the soffit. Find the percentage loss of stress in steel due to creep, shrinkage, elastic deformation of concrete and 5% relaxation of stress in steel. The initial pre-stress in steel is 1000 MPa, E_s = 210 GPa, E_c = 36.8 GPa. Creep coefficient = 1.6, Shrinkage strain = 3.9 x10^{-4}.	L3/CO3	6
C)	A rectangular concrete beam 200 mm wide and 450 mm deep spanning over 8 m is prestressed by a straight cable carrying an effective prestressing force of 500 kN located at an eccentricity of 50 mm. The beam supports a live load of 4 kN/m. Calculate the resultant stress distribution for the center of span of the beam assuming the density of concrete as 25 kN/m^3.	L3/CO3	6
Q. 6	**Solve Any Two of the following.**		12
A)	What is structural auditing? What are its advantages and how its carried? Explain with example.	L2/CO4	6
B)	A prestressed concrete beam of rectangular section 300 mm wide and 600 mm deep has a span of 15 m. The effective force is 1520 kN at an eccentricity of 150 mm. The DL of the beam is 5 kN/m and LL on beam is 8 kN/m. Determine the extreme stresses in concrete at i) end span, ii) at mid span.	L3/CO4	6
C)	Design a post-tensioned hanger to carry an axial tension of PDL = 225 kN (dead load including self weight) and PLL = 125 kN. The dimension of the hanger is 300 × 800 mm. Design the section without considering non-prestressed reinforcement. Tension is not allowed under service loads. The grade of concrete is M 35. The age at transfer is 28 days. Assume 15% long term losses in the prestress. The	L3/CO4	6

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following properties of the prestressing strands are available from tests. Type of prestressing tension : 7 wire strand, nominal diameter = 12.8 mm, nominal area = 99.3 mm², tensile strength (fpk) = 1860 N/mm², Modulus of elasticity = 195 kN/mm².

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B.Tech. **Branch: Civil Engineering** **Semester: VII**

Subject Code & Name: Design of Concrete Structures – II (BTCVC701_V20)

Max. Marks: 60 **Date: 05/02/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question expected answer as per OBE or the Course Outcome (CO) to which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

					(Level/ CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**					**12**
1	Torsion gives rise to				(Kn)	1
	a. Only Additional Moment	b. Only Additional Shear Force	c. Both Additional Moment and Shear Force	d. None of the above		
2	When $M_y > M_x$					1
	a. $M_{ey}=0$	b. $M_{ex}=M_y-M_x$	c. $M_{ex}=M_y+M_x$	d. $M_{ex}=M_y/M_x$		
3	In case of torsion, the side face reinforcement if provided if the overall depth of beam exceeds				CO1	1
	a. 450 mm	b. 600 mm	c. 750 mm	d. 900 mm		
4	The area of side face reinforcement required is				CO1	1
	a. 0.1% Ag	b. 0.2 % Ag	c. 0.4 % Ag	d. 0.8% Ag		
5	Axially loaded column is subjected to					1
	a. Only Axial Force	b. Axial Force and Moment in one direction	c. Axial Force and Moments in two directions	d. None of the above		
6	Uni-axially loaded column is subjected to				CO2	1
	a. Only Axial Force	b. Axial Force and Moment in one direction	c. Axial Force and Moments in two directions	d. None of the above		
7	Condition of short column is				CO2	1

	a. Slenderness ratio ≤ 12 along X axis	b. Slenderness ratio ≤ 12 along Y axis	c. Slenderness ratio ≤ 12 along both X and Y Axis	d. None of the above	
8	Minimum area of steel recommended in column as per IS 456:2000 is				CO1
	a. 0.8 % Ag	b. 1.0 % Ag	c. 0.6 % Ag	d. 1.2 % Ag	
9	The process of tensioning the cable after the setting of concrete is called as				CO1
	a. Pre-stressing	b. Pre-tensioning	c. Post-tensioning	d. None of the above	
10	Which of the following is not an immediate loss				CO1
	a. Loss due to elastic shortening	b. Loss due to anchorage slip	c. Loss due to friction	d. Loss due to creep	
11	In case of loss due to friction with jacking at both ends, maximum loss is observed at				CO1
	a. Jacking end	b. Unjacked end	c. Mid-section of the beam	d. None of the above	
12	Which of the following is the system without tensioning				CO1
	a. Freyssinet Anchorage System	b. Gifford Udall System	c. Magnel Blaton System	d. All of the above	
Q. 2	**Solve the following.**				
A)	An RC beam (350 x 800) mm is subjected to the factored bending moment of 215 kN-m, factored shear force of 150 kN and factored torsion of 105 kN-m respectively. Assume M30 grade concrete and Fe415 grade steel, design the reinforcement for the beam. Take effective cover as 50 mm.				CO1
B)	Design a rectangular beam section of size 250 x 450 mm subjected to service bending moment of 30 kN-m, service shear force of 40 kN, service torsion moment of 20 kN-m. Use M20 grade concrete and Fe415 grade steel. Take effective cover as 40 mm.				CO2
Q.3	**Solve the following.**				
A)	Design the reinforcement in a column of size 450 mm × 600 mm, subject to an axial load of 2000 kN under service dead and live loads. The column has an unsupported length of 3.0 m and is braced against side sway in both directions also both ends are rotationally fixed. Use M20 concrete and				CO1

	Fe415 steel.		
B)	Design the helical reinforcement in a circular column subjected to a factored load of 1500kN. The column has an unsupported length of 3.2 m and is braced against side sway. Use M35 concrete and Fe415 steel.	CO2	6
Q. 4	**Solve Any Two of the following.**		12
A)	Compare pre-tensioning and post-tensioning.	CO3	6
B)	Explain the various types of pre-stressing.	CO3	6
C)	Explain in brief Magnel-Blaton system of pre-stressing.	CO3	6
Q.5	**Solve Any Two of the following.**		12
A)	A rectangular concrete beam 100 m wide and 250 mm deep spanning over 8 m is prestressed by a straight cable carrying and effective prestressing force of 250 kN located at an eccentricity of 40 m. The beam supports a live load of 1.2 kN/m. Calculate the resultant stress distribution for the centre of span cross section of the beam assuming density of concrete as 24 kN/m^3.	CO4	6
B)	A symmetrical I-Section beam is used to support an imposed load of 2 kN/m over a span of 8m. The section details are as, flange width is 300 mm, flange thickness is 60 mm, web thickness is 80 mm and overall depth of the beam is 400 mm. At the center of span, the effective prestressing force of 100 kN acts at a distance of 50 mm from the soffit. Estimate the stress at the center of span for the combined effect of prestress, dead load and live load.	CO4	6
C)	A prestressed concrete beam with a rectangular section 150 mm wide and 300 mm deep supports a UDL of 4 kN/m which includes the self-weight. The effective span of the beam is 6 m. The beam is concentrically prestressed by a cable carrying a force of 180 kN. Locate the location of pressure line in the beam.	CO4	6
Q. 6	**Solve Any Two of the following.**		12
A)	Explain the various types of losses in prestressing.	CO3	6
B)	A pretensioned beam 200 mm wide and 300 mm deep is prestressed by 10 wires of 7 mm diameter initially stressed to 1200 N/mm^2, with their centroids located 100 mm from the soffit. Find the maximum stress in	CO4	6

	concrete immediately after transfer, allowing only for elastic shortening of concrete. If the concrete undergoes a further shortening due to creep and shrinkage while there is a relaxation of five percent of steel stress, estimate the final percentage of loss of steel stress. Take Es as 210 kN/mm^2, Ec as $5700\sqrt{F_{ck}}$, f_{ck} as 42 N/mm^2, Creep coefficient (ϕ) as 1.6 and total residual shrinkage strain as 3×10^{-4}.	
C)	A post tensioned prestressed concrete beam of rectangular cross section 150 mm wide to be designed for an imposed load of 3 kN/m over a simply supported span of 7.5 m. The stress in concrete must not exceed 10 kN/mm^2 in compression and 1.5 kN/mm^2 in tension at any time. Loss in prestress is 14%, calculate the minimum depth required. Also find the number of cables required if the prestress is 1250 N/mm^2. Assume diameter of cable as 5 mm.	
	*** End ***	

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular and Supplementary Winter Examination – 2024

Course: B. Tech | Branch: Civil Engineering | Semester: VII

Subject Code & Name: BTCVC702 & Infrastructure Engineering

Max Marks: 60 | Date: 07/12/2024 | Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question expected answer as per CO3 of the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculator is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

			Level (CO)	Marks
Q.1.	Objective type questions. (Compulsory Question)			12
1	What is Railway Engineering?		L1	1
	a) Railway engineering deals with the design, construction, and operation of railway systems			
	b) Railway engineering deals with the design, construction, and operation of highway bridges			
	c) Railway engineering deals with the design, construction, and operation of road transportation			
	d) None of the mentioned			
2	Which of the following is not a component of the rail?		L1	1
	a) Ballast	b) Foot		
	c) Web	d) Head		
3	Which of the following rail has been standardized for adoption on the Indian railways?		L1	1
	a) combination of BH and DH	b) Flat footed (FF)		
	c) double headed (DH)	d) bull headed (BH)		
4	What is the main purpose of points and crossings in railway tracks?		L1	1
	a) Increase the train speed	b) Facilitate change in direction of track		
	c) Improve train stability	d) Reduce maintenance costs		
5	What is the primary advantage of metro rail systems?		L1	1
	a) Reduced construction cost	b) Reduced road congestion		
	c) Faster intercity travel	d) Increased cargo capacity		
6	Public Private Partnership (PPP) in metro rail projects is primarily used for:		L1	1
	a) Reducing the number of stakeholders	b) Sharing project risks and investments		
	c) Decreasing project completion time	d) Managing project personnel		

7 Which feature protects harbors from wave action?
a) Jetties
c) Breakwaters
b) Piers
d) Wharves

8 Which factor is critical in the site selection of an airport?
a) Proximity to highways
c) Availability of parking
b) Soil conditions and topography
d) Existing railway networks

9 Which airport component helps manage water runoff?
a) Taxiways
c) Airport drainage
b) Runways
d) Terminal buildings

10 What is the purpose of taxiways in an airport?
a) Facilitate passenger movement
c) Store aircraft
b) Connect runways to terminals
d) Serve as emergency runways

11 Which tunneling method is suitable for hard rock conditions?
a) Shield tunneling
c) Pipe jacking
b) Drill and blast method
d) Box pushing

12 Ventilation in tunnels is required to:
a) Reduce noise levels
c) Improve structural durability
b) Remove dust and gases
d) Maintain water drainage

Q. 2 Solve the following.

A) Explain necessity of Turnout with its components.

B) Define Gradients and Fastening. Explain its types.

Q. 3 Solve the following.

A) Describe types of crossing with neat sketches.

B) Explain Options of Mass Rapid Transit Systems (MRTS).

Q. 4 Solve Any Two of the following.

A) Write a short on Inland Water Transport in India.

B) How Harbours are classified based on its utility and location.

C) Define Harbour. Explain components of Harbour.

Q.5 Solve Any Two of the following.

A) Define Airport and Airport Engineering. Explain components of airport.

B) Explain factors affecting on site selection of Airport.

C) Explain necessity of Airport Lighting.

Q. 6 Solve Any Two of the following.

A) Explain necessity of Tunnel Lining & Tunnel Drainage.

B) Explain necessity of Ventilation and Lighting in tunneling operation.

C) Explain classification of tunnel based on Size and Shape.

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Courses: B.Tech **Branch: Civil Engineering** **Semester: VII**

Subject Code & Name: BTCVC705 Construction Technologies

Max Marks: 60 **Date: 10/03/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and based on objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in [ ] in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

					(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**					12
1	_____ consist of a large bucket which is attached to a tractor.				BL1/CO1	1
	a. Bulldozer	b. Scraper	c. Grader	d. Excavator		
2	The size of bulldozer is indicated by the dimension of its _____.				BL1/CO1	1
	a. Site	b. Tyre	c. Engine	d. Blades		
3	In Vacuum method, the top of bore hole is sealed by _____.				BL1/CO1	1
	a. Soil Cement	b. Bentonite	c. Clay	d. All		
4	Whichof the earth moving machine has shortest cycle time?				BL1/CO2	1
	a. Dragline	b. Pan	c. Crawler	d. Wiper Shovel		
5	Which process comes after batching in manufacture process?				BL1/CO3	1
	a. Transportation	b. Mixing	c. Mixing	d. Compacting		
6	Ready mix plant & central mix plant differ in: _____				BL1/CO3	1
	a. Transportation	b. Setting Time	c. Properties	d. Water addition		
7	_____ is provided at the top of the tremie to receive concrete.				BL1/CO4	1
	a. Bucket	b. Hopper	c. Tremie	d. Pipe		
8	Excavation of soil inside the well in the river beds can be done by_____.				BL1/CO4	1
	a. Auger	b. Sangmit in workers	c. Special equipment	d. None		
9	Which of the following are used for the horizontal movement of material in a facility.				BL1/CO4	1
	a. Cranes	b. Lifters	c. Conveyors	d. Lorries		
10	Which of the following is a mechanical device used to raise & lower loads?				BL1/CO4	1
	a. Chains	b. Hooks	c. Bearings	d. Guided Wires		

11	The places where there is a passage of flood water then then highway has to be built on a. Embankment b. Subway c. Overpass d. Underpass	BL1/CO4
12	The layer which is constructed above embankment is called a. Subgrade b. Fill c. Base d. Sub base	BL1/CO4
Q. 3	**Solve the following.**	
A)	Differentiate Mechanical & Manual construction.	BL4/CO1
B)	Explain about the equipment's involved in the construction of multistoried building.	BL3/CO1
Q.3	**Solve the following.**	
A)	Explain what is ripper? Enlist various factor affecting output of ripper.	BL2/CO2
B)	Describe dewatering? Explain in detail various methods of dewatering.	BL2/CO2
Q. 4	**Solve Any Two of the following.**	
A)	Explain RMC? Explain the working of RMC plant with diagram?	BL3/CO3
B)	Describe under water concreting? Explain in detail working of any two methods with neat sketch.	BL2/CO3
C)	Write a short note on Grouting.	BL2/CO3
Q.5	**Solve Any Two of the following.**	
A)	Describe what is Prefabricated Construction along with its types.	BL2/CO4
B)	Explain what is mean by dredging? Explain the various types of dredgers?	BL2/CO4
C)	Enlist the different types of cranes? Explain any three the types in detail?	BL2/CO4
Q. 6	**Solve Any Two of the following.**	
A)	Explain the various factors needed to consider in road construction?	BL2/CO4
B)	How do you build a new railway line? What is the most important strategic reasons for the construction of new railway line?	BL2/CO4
C)	Explain diaphragm wall in detail.	BL2/CO4

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B-Tech **Branch : Civil Engineering** **Semester : VII**

Subject Code & Name: BTCVC703_Y20 Water Resources Engineering

Max Marks: 60 **Date: 10/02/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		**12**
1	The surface Run off is the quantity of water		1
	a. absorbed by soil	b. intercepted by buildings and vegetative cover	c. required to fill surface depressions	d. that reaches the stream channels
2	Pick up the correct equation from the following		1
	a. Run off = Surface run off - Ground water flow	b. Run off = Surface run off + Ground water flow	c. Run off = Surface run off ÷ Ground water flow	d. Run off = Surface run off / Ground water flow
3	Precipitation caused by lifting of an air mass due to the pressure difference, is called			1
	a. cyclonic precipitation	b. convective precipitation	c. orographic precipitation	d. none of these
4	For the estimate of high floods in fan shaped catchment, the formula used is			1

	a. Inglis formula	b. Ryve's formula	c. Dicken's formula	d. none of these
5	Which of the below is example of Earthen dam?			
	a. Idukki Dam	b. Bhakra Nangal Dam	c. Bisalpur Dam	d. Ranaviura Sagar Dam
6	Buttress dams are of _____ types			
	a.1	b. 4	c. 3	d. 6
7	Due to inadequate drainage which factor causes waterlogging with constant percolation?			
	a. Over and Intensive Irrigation	b. Impervious Obstruction	c. Inadequate Surface Drainage	d. Flat Topography
8	What is the name of the process to clean water using filters?			
	a. Sublimation	b. Rainwater harvesting	c. Oxidation	d. Purification
9	How can we increase the water efficiency of irrigation system?			
	a. By pouring unnecessary water to the land	b. By not supplying adequate water	c. By using more manures	d. By applying drip irrigation method
10	Which type of canal is most useful in hilly areas?			
	a. Contour Canal	b. Watershed Canal	c. Field Channel	d. Side Slope Canal
11	Which of the following is the other name of perennial irrigation system?			
	a. Storage Irrigation	b. Flood Irrigation	c. Controlled Irrigation	d. Direct Irrigation
12	The width provided at the site for the river to flow and also the length of the weir is _____			
	a. launching apron	b. waterway	c. top width	d. bed mean width

Q. 2	**Solve the following.**		12
A)	Define Hydrology and Explain hydrologic cycle with neat sketch.		6
B)	Enlist types of spillway and explain any one with neat sketch.		6
Q.3	**Solve the following.**		12
A)	Explain causes of failure of Gravity dam and precautions against failure.		6
B)	Define Runoff. Explain factor affecting Runoff.		6
Q. 4	**Solve Any Two of the following.**		12
A)	Write short notes on S-curve method.		6
B)	Estimate the missing rainfall at 'R' from given data: P, Q, R, S, T, U are the stations having normal annual rainfall are 125, 102, 114, 76, 137, 148 respectively and precipitation of particular storm are 13.2, 9.2, ?, 6.8, 10.2, 14.2 respectively.		6
C)	Explain Bligh's creep theory.		6
Q.5	**Solve Any Two of the following.**		12
A)	Explain Lacey's silt theory.		6
B)	Explain methods of improving Duty.		6
C)	Explain types of Arch Dam.		6
Q. 6	**Solve Any Two of the following.**		12
A)	Explain Ground water recharge.		6
B)	Explain causes of water logging.		6
C)	Explain boring methods.		6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular and Supplementary Winter Examination – 2024

Course: B. Tech. **Branch : Civil Engineering** **Semester : VII**

Subject Code & Name: BTCVC704 & Professional Practices

Max Marks: 60 **Date:12/02/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective type questions.*
3. *Candidates are required to attempt any FOUR questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per UBT or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Objective type questions: (Compulsory Question)**		12
1	What is the primary purpose of an estimate in construction projects?	(L2/CO1)	1
	a. To forecast the budget and resources required	b. To design the building layout	c. To manage the workforce only	d. To approve structural designs
2	What is the P.W.D method used for in estimation?	(L1/CO1)	1
	a. Site layout planning	b. Taking out quantities systematically	c. Equipment procurement	d. Safety audit of the site
3	What does "analysis of rates" primarily help in determining?	(L2/CO2)	1
	a. Workforce skill level	b. Unit cost of different construction items	c. Project timeline	d. Environmental impact
4	What does "price escalation" in a project account for?	(L4/CO2)	1
	a. Increased labor efficiency	b. Change in material costs over time	c. Decrease in project size	d. Additional safety requirements
5	Which of the following is a major advantage of competitive bidding?	(L2/CO3)	1
	a. Ensures a single contractor wins every bid	b. Promotes fairness and cost-effectiveness	c. Avoids quality inspections	d. Reduces documentation requirements
6	What are the conditions of a contract primarily used for?	(L2/CO3)	1
	a. Hiring temporary workers	b. Defining terms, obligations,	c. Determining rates for tenders	d. Managing physical site layout

		and legal binding			
9	What does B.O.T stand for in construction projects?				(L1/CO3)
	a. Build, Operate, Transfer	b. Build, Offer, Terminate	c. Base, Operate, Takeover	d. Budget, Operate, Target	
10	Which of the following is an essential component of a legally valid contract?				(L2/CO4)
	a. Mutual agreement between parties	b. Verbal communication only	c. Immediate cash payments	d. Approval from the workers	
11	What is the main purpose of arbitration in contracts?				(L4/CO4)
	a. To avoid legal procedures altogether	b. To resolve disputes between parties	c. To finalize project costs	d. To delay payment methods	
12	How are works classified under the P.W.D organizational structure?				(L1/CO4)
	a. Based on urgency only	b. According to the types of tasks and costs involved	c. By geographic location	d. By project duration only	
13	What is the primary factor affecting the valuation of a property?				(L2/CO5)
	a. Weather conditions	b. Market demand and location	c. Type of equipment used in construction	d. Contractor's workforce size	
14	Which method is used to calculate the depreciation of buildings over time?				(L1/CO5)
	a. Gross Yield Method	b. Sinking Fund Method	c. Arbitrary Cost Method	d. Tender Evaluation Method	
Q.2.	**Solve the following.**				
A)	What is the purpose of estimating in civil engineering projects? Discuss the types of estimates and explain their importance.				(L2/CO1)
B)	Describe the process of taking out quantities using the P.W.D method. Why is it considered systematic?				(L3/CO1)
Q3.	**Solve the following.**				
A)	Explain how the analysis of rates is carried out for an R.C.C. slab. What factors influence rate analysis?				(L4/CO2)
B)	Differentiate between detailed and approximate estimates. Give examples of when each is used.				(L2/CO2)

Q. 4	**Solve Any Two of the following.**		**12**
A)	What are the different types of tenders? Explain competitive bidding and its advantages.	(L4/CO3)	**6**
B)	Describe the key components of tender documents and their significance in a construction project.	(L2/CO3)	**6**
C)	What is the significance of scrutinizing tenders? Discuss the steps involved in tender scrutiny and acceptance.	(L5/CO3)	**6**
Q.5	**Solve Any Two of the following.**		**12**
A)	What are the essentials of a legally valid contract in civil engineering works?	(L2/CO4)	**6**
B)	Explain the methods of carrying out work under P.W.D. and the role of bill items in payment.	(L3/CO4)	**6**
C)	What is arbitration, and how does it resolve disputes in civil engineering contracts?	(L4/CO4)	**6**
Q. 6	**Solve Any Two of the following.**		**12**
A)	Define depreciation and explain any two methods of calculating it in property valuation.	(L2/CO5)	**6**
B)	What are the factors affecting the valuation of properties?	(L4/CO5)	**6**
C)	Explain the concept of sinking fund and its importance in property valuation.	(L3/CO5)	**6**
	***** End *****		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B. Tech. Branch : Civil Engineering Semester : VII

Subject Code & Name: BTCVE702x_Bridge Engineering

Max.Marks: 60 Date: 21/02/2025 Duration: 3 hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and based on objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

					Level/CO	Marks
Q. 1	Objective type questions. (Compulsory Question)					12
1	What is the typical span range of a small road bridge?				L/CO1	1
	a. Less than 5 meters	b. 5 to 15 meters	c. 15 to 30 meters	d. Over 30 meters		
2	The Golden Gate Bridge is an example of which type of bridge?				L/CO2	1
	a. Truss	b. Suspension	c. Arch	d. Cantilever		
3	What is the minimum vertical clearance for national highways?				L/CO2	1
	a. 4.5 meters (15 feet)	b. 5.0 meters (16.5 feet)	c. 5.5 meters (18 feet)	d. 6.0 meters (19.7 feet)		
4	In the Rational Formula for calculating peak discharge (Q), which of the following is the correct formula?				L/CO3	1
	a. $Q = C \cdot A \cdot I$	b. $Q = C \cdot A \cdot I$	c. $Q = C \cdot A \cdot I^{1/2}$	d. $Q = C \cdot A \cdot I^{1/2}$		
5	According to IRC, what is the standard classification for vehicular load in road bridges?				L/CO3	1
	a. Class A, Class B	b. Class I, Class II	c. Class M, Class L	d. Class AA, Class 70R		
6	Longitudinal forces are essential to consider when designing for:				L/CO1	1
	a. Earthquakes	b. Dynamic load impact	c. Temperature-induced expansion	d. All of the above		
7	Which design code is primarily used for highway and road bridge design in India?				L/CO1	1
	a. AASHTO	b. IS Code	c. IRC Code	d. Eurocode		

8	Which of the following is NOT a type of expansion joint used in bridge design?	1/CO2	1
	a. Finger Joint / b. Modular Joint / c. Hinged Joint / d. Asphalt Expansion Joint		
9	Which of the following design methodologies is considered preferable for the analysis of bridge superstructures?	2/CO3	
	a. Orthotropic Plate Theory / b. Grillage Analysis / c. Finite Element Analysis / d. Load Distribution Techniques		
10	Which of the following is an important parameter in the selection of a bridge superstructure?	2/CO2	1
	a. Soil Type / b. Length and Span of the Bridge / c. Traffic load / d. All of the above		
11	What is the primary function of wing walls in a bridge?	2/CO1	
	a. To provide stability to the bridge superstructure / b. To support the bridge deck / c. To protect the abutments from soil erosion / d. To support expansion joints		
12	Which type of foundation is most suitable for a bridge in a riverbed?	2/CO1	1
	a. Open Foundation / b. Well Foundation / c. Pile Foundation / d. Slab Foundation		
Q.2	**Solve the following.**		
A)	Explain the main components of a road bridge with the help of neat sketch and describe the function of each component in supporting the bridge structure.	2/CO1	
B)	Mention the ways in which bridges are classified.	1/CO1	
Q.3	**Solve the following.**		
A)	What are the environmental considerations that need to be addressed when collecting data for the design of a river bridge?	2/CO2	

B)	A bridge is proposed to be constructed across a river with a discharge of 400 m^3/s. Assuming the silt factor f=1.20, determine the maximum scour depth when the bridge consists of 4 spans, each of 25 m (Assume R = 2). Also discuss the factors that influence the scour depth around bridge piers.	3/CO2	6
Q. 4	**Solve Any Two of the following.**		12
A)	Explain the different types of live load applications for road bridges as per IRC 6. How does the classification system help in determining the design loads for various types of vehicles?	3/CO1	6
B)	Explain the different types of loads that must be considered in the design of road bridges according to the IRC, BS, and AASHTO codes. Discuss the significance of dead load and live load in bridge design.	3/CO2	6
C)	What factors should be considered in determining the appropriate sidewalk width for urban and rural roads?	3/CO2	6
Q. 5	**Solve Any Two of the following.**		12
A)	Discuss the advantages of using Finite Element Analysis (FEA) in the design of bridge superstructures. How does FEA provide more accurate results compared to traditional methods?	3/CO3	6
B)	Discuss the different types of bridge bearings and their functions. How are they designed to accommodate movements due to temperature, traffic load, and settlement?	3/CO4	6
C)	What are the different types of expansion joints used in bridge design? Explain how they are designed to accommodate movement and prevent structural damage.	3/CO3	6
Q. 6	**Solve Any Two of the following.**		12
A)	Define following in detail i) Abutment ii) Pier iii) Wing wall	3/CO1	6
B)	Differentiate between open foundation, pile foundations, and well foundations used in bridge construction. Provide examples of bridges where each foundation type is commonly used.	3/CO2	6
C)	Discuss the importance of soil-structure interaction in the design of bridge substructures. How does it influence the performance and safety of the bridge?	3/CO2	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular and Supplementary Winter Examination – 2024

Name: B.Tech | Branch: Civil Engineering | Semester: VII

Subject Code & Name: BTCVE705A & Engineering Economics

Max Marks: 60 | Date: 21/02/2025 | Duration: 3 Hrs.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per CBT and the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		Level (CO)	Marks
1.	**Objective type questions. (Compulsory Question)**		12
1	Time value of money concept emphasizes that: a) Money today is worth less than money tomorrow b) Money today is worth more than money tomorrow c) Money has no inherent value d) The value of money remains constant over time	L1	1
2	Inflation refers to: a) A decrease in the general price level b) A sustained increase in the general price level c) A stable price level d) A sudden drop in the price of a specific good	L1	1
3	Compound interest is calculated on: a) Only the principal amount b) The principal amount plus accumulated interest c) The rate of interest only d) The time period only	L1	1
4	Which component of an economic analysis visually represents cash inflows and outflows over time? a) Break-Even Analysis b) Cash Flow Diagram c) Present Worth Analysis d) Future Worth Analysis	L1	1
5	The formula for the Single Payment Compound Amount Factor is used to find: a) Present value of uniform series payments b) Future value of a single payment c) Rate of return on investment d) Effective interest rate	L1	1

6. Which method is used to determine the annual equivalent value of cash flows over a project's life? [1]
   a) Present Worth Analysis
   b) Annual Worth Analysis
   c) Future Worth Analysis
   d) Break Even Analysis

7. Which type of cost includes fuel, maintenance, and labor in project economics? [1]
   a) Fixed Costs
   b) Operating Costs
   c) Capital Costs
   d) Replacement Costs

8. In equipment economics, which option generally offers the most flexibility for short-term projects? [1]
   a) Buying
   b) Leasing
   c) Renting
   d) Financing

9. Which method is commonly used to evaluate the profitability of an investment by discounting future cash flows to the present? [1]
   a) Payback Period
   b) Net Present Value (NPV)
   c) Accounting Rate of Return
   d) Break Even Analysis

10. Which form of financing does NOT require repayment but may dilute ownership? [1]
   a) Debt Financing
   b) Equity Financing
   c) Borrowings
   d) Debentures

11. Which analysis uses financial statements to assess a company's performance and financial health? [1]
   a) Cash Flow Analysis
   b) Ratio Analysis
   c) Variance Analysis
   d) Marginal Analysis

12. In the Chart of Accounts, where are revenue accounts typically recorded? [1]
   a) Under Assets
   b) Under Liabilities
   c) Under Equity
   d) Under Income and Expense Accounts

Q. 2 Solve the following.

A) Explain the concept of demand and supply as it relates to engineering economics. [3]

B) Discuss the various types of costs encountered in engineering projects. [4]

Q.3	**Solve the following.**			12
A)	What is a cash flow diagram, and how is it used in engineering economic analysis?	L2	6	
B)	Discuss break even analysis and its significance.	L2	6	
Q. 4	**Solve Any Two of the following.**			12
A)	Discuss the economics of project parameters and their role in project management decisions.	L3	6	
B)	Explain the concept of Replacement Analysis.	L2	6	
C)	Describe the different types of estimates used in engineering economics.	L2	6	
Q.5	**Solve Any Two of the following.**			12
A)	Illustrate the various depreciation methods.	L3	6	
B)	Describe the sources of finance available for engineering projects.	L2	6	
C)	How do financial institutes contribute to project financing, and what are their roles in the process?	L3	6	
Q. 6	**Solve Any Two of the following.**			12
A)	Define financial management and its importance in engineering projects.	L1	6	
B)	Define a Balance Sheet and explain its importance in financial reporting.	L2	6	
C)	Write a note on international finance.	L2	6	

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B.Tech. Branch : Mechanical Engineering/Mechanical Engineering(Sandwich)
Semester : VII
Subject Code & Name: BTME(C701 Mechatronics(T)
Max Marks: 60 Date 06/01/2025 Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and multiple objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		(Level)(CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		**12**
1.	Question : The function of transducer is to convert	Level 1	1
	a. one form of energy into another form of energy b. mechanical energy into electrical energy c. electrical energy into mechanical energy d. mechanical displacement into electrical signal		
2.	Question : The transfer function of a system refers to the	Level 1	1
	a. ratio of Laplace transform of output to Laplace transform of input b. ratio of Laplace transform of input to Laplace transform of output c. product of Laplace transform of input and output d. none of the above		
3.	Question : Non contact sensors have	Level 1	1
	a. physical contact between the measured object and sensor b. no physical contact between the measured object and sensor c. all of the above d. none of the above		

4 Question : A sensor that converts speed of rotation directly into an electrical signal is called — Level 1

a. tachogenerator b. tachometer c. orifice meter d. venturimeter

5 Question : An ideal amplifier has ———— input impedance — Level 1

a. high b. low c. medium d. none of the above

Question : A 4/2 Directional Control Valve (DCV) has — Level 1

a. 2 ports b. 4 ports c. 6 ports d. none of the above

7 Question : An ———— acts as a storage device for high pressure fluid and can store and release the hydraulic oil at a required system pressure — Level 1

a. accumulator b. receiver c. tank d. none of the above

Question : The function of a check valve is to allow flow in———— — Level 1

a. one direction b. two directions c. three directions d. none of the above

Question : Speed of a DC motor changes with — Level 1

a. flux b. resistance in the armature circuit c. voltage d. all of the above

10 Question : An I/O port have to be of — Level 1

a. 8 bit b. 16 bit c. 7 bit d. any width

Question : The integral control mode is — Level 1

a. phase leading b. phase lagging c. response d. phase reversing

Question : The term PLC stands for — Level 1

a. personal logic controller b. programmable logic controller c. programmable logic computer d. personal logic computer

Q. 2 **Solve the following.**

A)	What are the important advantages of mechatronics systems?	CO1	6
B)	How a capacitive proximity sensor works? Explain any one proximity sensor with a neat sketch.	CO1	6

Q.3 Solve the following. 12

A)	What is the need for signal conditioning? What are the operations performed by the signal conditioner?	CO2	6
B)	How a seven segment display works? Explain it with an example.	CO2	6

Q.4 Solve Any Two of the following. 12

A)	Compare physical components of hydraulic and pneumatic systems.	CO3	6
B)	Explain the controlling of a double-acting cylinder with a suitable pneumatic circuit.	CO3	6
C)	Why are cascaded system circuits preferred for multi-cylinder control problems? Explain it with a suitable example.	CO3	6

Q.5 Solve Any Two of the following. 12

A)	Explain the architecture of a 8085 microprocessor with a suitable sketch.	CO4	6
B)	What are the guidelines used for selection of Programmable Logic Controllers (PLCs)? Explain it with one practical example.	CO4	6
C)	How Ladder Logic programming technique is used for programming of PLCs? Explain it with a suitable example.	CO4	6

Q. 6 Solve Any Two of the following. 12

A)	What do you mean by transfer function? Explain it with an example.	CO5	6
B)	How an integral controller works? Explain it with an example.	CO5	6
C)	Explain the PID controller with an example.	CO6	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B.Tech. Branch : Mechanical Engineering /Mech. Engg. (Sandwich) Semester : VII

Subject Code & Name: BTME/C702, CAD/CAM

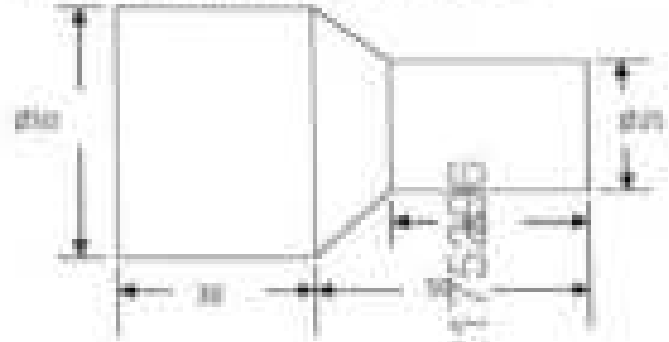
Max Marks: 60 Date: 07/01/2025 Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and shall be objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		Level /CO	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	To view portion of a image enclosed in a rectangular region is called	CO-01	1
	a. View port / b. Windowing / c. Raster scan / d. Stroke writing		
2	To display different portions of the drawing in different region of the screen is called	CO-01	1
	a. View port / b. Windowing / c. Raster scan / d. Stroke writing		
3	In geometric modeling Solid model contains	CO-2	1
	a. Geometrical data / b. Topological information / c. Geometrical data & Topological information / d. Topographical information		
4	In geometric modeling wire frame and surface models contains	CO-2	1
	a. Geometrical data / b. Topological information / c. Geometrical data & Topological information / d. Topographical information		
5	Easiest and most advanced method of geometric modeling is	CO-2	1
	a. Solid modeling / b. Wire frame modeling / c. Surface modeling / d. None of these		
6	Primitives are combined by mathematical set of Boolean operations in	CO-03	1
	a. Constructive Solid modeling / b. Destructive Solid modeling / c. Boundary representation / d. Sweeping		
7	A surface model is generated by using wire frame entities - plane surface, ruled surface, tabulated surface & surface of revolution is known as	CO-03	1
	a. Analytical entities / b. Synthetic entities / c. Destructive Solid Geometry / d. Solid modelling		

8	Becier surface allows				CO-01	1
	a. Local control	b. Global control	c. Both local and global control	d. None of these		
9	Elements of Numerical Control system are				CO-04	1
	a. Program of instructions	b. Machine control unit	c. Processing equipment	d. All the above		
10	In manual part program preparatory code for "rapid movement line path" is				CO-05	1
	a.G00	b. G01	c. G08	d. G71		
11	In manual part program code for auxiliary function "program end with rewind" is				CO-05	1
	a. M30	b. M01	c. M03	d. M02		
12	In APT programming the surface which guide the side of the cutter is known as				CO-06	1
	a. Drive surface	b. Part surface	c. Check surface	d. Fillet surface		
Q. 2	**Solve the following.**					**12**
A)	Explain minimum three cursor control devices used as CAD input device.				CO-01	6
B)	A triangle ABC with vertices A (20, 20), B (60, 20), and C (20, 80) is to be scaled by factor of 0.5 about a point P (40, 40). Determine composite transformation matrix and coordinates of vertices of scaled triangle.				CO-02	6
Q.3	**Solve the following.**					**12**
A)	Compare the CSG and B-Rep methods as a modeling technique for CAD.				CO-03	6
B)	What are the various windowing applications in CAD? Explain with the help of neat sketches and suitable examples.				CO-02	6
Q. 4	**Solve Any Two of the following.**					**12**

A)	Write a manual part program for a plain and taper turning the forged bar of 110 mm diameter as per the drawing shown.  	CO-05	6
B)	Classify numerical control system based on 1. Type of control systems 2. Type of motion control 3. Number of axes Briefly discuss advantages and disadvantages of any one NC system.	CO-05	6
C)	What are the advantages of "Point to point control' in CNC systems? Also mention in which particular applications it will be recommended?	CO-05	6
Q.5	**Solve Any Two of the following.**		**12**
A)	Explain the terms: A. Field variables B. Shape function C. Stiffness matrix	CO-06	6
B)	Explain various properties of stiffness matrix	CO-06	6
C)	Explain various advantages of Finite Element Methods	CO-06	6
Q. 6	**Solve Any Two of the following.**		**12**
A)	Discuss types of flexible manufacturing system layouts.	CO7	
B)	What is computer integrated manufacturing (CIM)? List its benefits.	CO8	
C)	Briefly explain Retrieval & Generative CAPP systems.	CO9	
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Examination – Winter 2024

Course: B. Tech. Branch: Mechanical Engineering/Mechanical Engg(Sandwitch) Semester: VII

Subject Code & Name: BTHM702/Industrial Engineering & Management

Max Marks: 80 Date:07/02/2025 Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 is compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per CBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data whenever necessary and mention it clearly.

		(Level)CO	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		**12**
1.	Who of the following is not related to the contribution in scientific management? a. F. W. Taylor b. Henri Fayol c. Elton Mayo d. Louis Pasteur	CO1	1
2.	Planning is a process by which _____ a. manager select, train, promote their staff b. a manager anticipates the future c. manager achieve harmony of individual efforts d. manager monitor program activities	CO1	1
3.	Staffing is a process by which _____ a. a manager anticipates the future b. manager select, train, promote their staff c. manager achieve harmony of individual efforts d. manager monitor program activities	CO2	1
4.	_____ is the quality of the behavior of the managers whereby they inspire confidence and trust in their subordinates and guide their activities in organized efforts. a. leadership b. planning c. staffing d. forecasting	CO2	1
5.	Which of the following is not a sales forecasting technique? a. Market Survey b. Delphi Method c. Correlation Analysis d. Batch Production	CO3	1
6.	Which of the following term is not related to Material Requirements Planning (MRP) a. Economic order quantity b. Bill of Materials file c. Inventory record file d. Matching people to jobs	CO3	1
7.	The facilities layout in which similar machines or similar operations are kept at one location is called as _____ a. Product Layout b. Combination Layout c. Process Layout d. None of these	CO4	1
8.	The layout in which the men and equipment are moved to the	CO4	1

material, which remains at one place is called as.

a. Product Layout | b. Fixed position layout | c. Process Layout | d. None of these

9 By clearly stating the goals of the business and meshing them with the goals of the employees, managers make use of a management technique called as ....

a. Total Quality Management (TQM) | b.Management by Objectives (MBO) | c. Total Preventive Maintenance (TPM) | d. All of these

_____ is concerned with investigating, reducing and eliminating ineffective time, whatever may be the cause

a. Product Layout | b. Work measurement | c. Bill of Materials file | d. Economic order quantity

Motion studies are used to_____

a. Develop the best work method | b. Develop motion consciousness | c. Develop economical and efficient tools | d. All of these

12 Which of the following is not a Total Quality Management technique?

a. Just in time (JIT) | b. quality circles | c. six sigma | d. Bill of Materials

Q. 3 Solve the following.

A) What is management? Explain nature, characteristics and objectives of management.

B) Explain various advantages of decentralization of authority.

Q. 3 Solve the following.

A) Explain the importance of performance appraisal and career strategy.

B) Briefly explain how team building, and communication help managers in effective leadership.

Q. 4 Solve Any Two of the following.

A) Explain any one type of facility layout in detail.

B) What are the different characteristics of services systems?

C) What is materials requirement planning?

Q. 5 Write Short Notes on Any Two of the following.

A) Capacity planning

B) Facilities layout

C) Assembly line balancing

Q. 6 Write Short Notes on Any Two of the following.

A) Micro motion study

B) Basic principles of ergonomics

C) Quality circles

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination – 2024

Course: B. Tech. Branch: Mechanical Engineering /Mechanical Engineering (Sandwich)

Semester: VII

Subject Code & Name: Non- conventional Machining (BTMPE703C)

Max. Marks: 60 Date: 20/02/2025 Duration: 3 Hr.

Instructions to the Students:

a. Each question carries 12 marks.

b. Question No. 1 will be compulsory and multiple objective type questions.

c. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.

d. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in [ ] in front of the question.

e. Use of non-programmable scientific calculators is allowed.

f. Assume suitable data wherever necessary and mention it clearly.

			(Level/CO)	Mark
Q. 1	Objective type questions. (Compulsory Question)			12
i	Non-Traditional machining can also be called as?		Recall/CO1	1
	a. Contact machining b. Non-contact machining	c. Partial contact machining d. Half contact machining		
ii	Which of the following is a conventional process of machining?		Recall/CO1	1
	a. Cylindrical Grinding b. Electrochemical machining	c. Electron beam machining d. Water jet machining		
iii	In electro-discharge machining, dielectric is used to ———		Recall/CO2	1
	a. help in the movement of the sparks b. control the spark discharges	c. act as coolant d. all of the mentioned		
iv	In the laser beam machining process, as compared to other unconventional machining processes, the heat affected zone is ———		Recall/CO2	1
	a. Larger b. Smaller	c. Not present d. Moderate		
v	Ultrasonic Machining can be used for which of the following processes and applications?		Recall/CO3	1
	a. Drilling b. Sinking and Contouring	c. Grinding d. All of the above		
vi	Which of the following material cannot be machined using ECM?		Understand /CO4	1
	a. High strength alloys b. Hardened steel	c. Non-conductive materials d. All of the above		
vii	What are the machining rates used in Machining ECM process?		Recall/CO6	1
	a. 0.1 to 2 mm/min b. 1 to 20 mm/min	c. 10 to 200 mm/min d. 100 to 500 mm/min		
viii	Which of the following is an example of hybrid machining?		Recall/CO5	1
	a. Ultrasonic Machining b. Electron Beam Machining	c. Ultrasonic assisted electrochemical machining d. Laser Beam Machining		

9	Which type of materials cannot be machined using Abrasive jet machining?	
	a. Soft materials b. Hard materials	c. Difficult to cut materials d. None of the above
10	How are the machining times in Laser beam machining?	
	a. Very slow b. Slow	c. Moderate d. Fast
11	In ECG, grinding action removes	
	a. workpiece material from the surface b. corroded surface layer making workpiece ready for electro-chemical process	c. oxide film formed on the surface d. particles removed from surface after chemical action
12	Which of the following is true about AJM?	
	a. It is a low cost method b. It is toxic towards the environment	c. It is harardous to human health d. It is not capable of anisotropic machining

Q. 3	**Solve the following.**
A)	Discuss the factors to be considered while selecting the non-conventional machining processes.
B)	Explain the classification of unconventional machining according to major energy source employed. What is the importance of unconventional machining?
Q.3	**Solve the following.**
A)	Explain the different types of maskants and etchants used in chemical machining process.
B)	Explain with a neat sketch the working principle and the parametric influence of abrasive jet machining.
Q. 4	**Solve Any Two of the following.**
A)	What are the main functions of electrolyte in the ECM? How the current density affects the material removal rate?
B)	List the various process parameters of USM and explain the effect of amplitude, frequency, static load and abrasive size in MRR and surface finish.
C)	Explain process parameters and process characteristics of PAM process.
Q.5	**Solve Any Two of the following.**
A)	List the merits and demerits of Laser Beam machining process.
B)	Differentiate between the water jet cutting and the abrasive water jet cutting.
C)	Explain with a neat diagram the working principle of abrasive jet machining and its applications.
Q. 6	**Solve Any Two of the following.**
A)	Sketch and explain the electro-chemical honing process.

B)	What is the process of ELID Grinding? Differentiate between conventional grinding with the ELID Grinding.	Understand /CO5	6
C)	How internal surface of components can be deburred, polished by abrasive flow finishing? Explain.	Understand /CO5	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B.Tech Branch : Mechanical Engineering/Mech Engg Sandwich Semester : VII

Subject Code & Name: BTMECH03- Manufacturing Processes- III

Max. Marks: 80 Date: 10/02/2024 Duration: 3 Hr.

Instructions to the Students:

1. *Each question carries 22 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

					(Level)(CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**					**12**
1	What type of motor is commonly used for precise positioning in CNC systems?				Understand CO1	1
	a) Induction motor	b) Stepper motor	c) Synchronous motor	d) Universal motor		
	Which device provides feedback in CNC systems for motion control?				Understand CO1	1
	a) Encoder	b) Solenoid	c) Resistor	d) Capacitor		
3	What classification of CNC systems is based on the number of axes controlled?				Understand CO1	1
	a) Open-loop and Closed-loop	b) Vertical and Horizontal	c) Single-axis and Multi-axis	d) Modular and Integrated		
4	Which of the following is used to change tools automatically in CNC machines?				Understand CO2	1
	a) Tool holder	b) Automatic Tool Changer	c) Spindle motor	d) Chuck key		
5	What does APT stand for in CNC programming?				Understand	1

	a) Advanced Part Technology	b) Automatically programmed tool	c) Automated Processing Technique	d) Adaptive Programming Tool	CO1
6	Which process uses a dielectric fluid for material removal?				Understand CO1
	a) Laser-beam machining	b) Electrical-discharge machining (EDM)	c) Chemical machining	d) Water-jet machining	
7	What is the primary mechanism of material removal in electrochemical grinding?				Understand CO1
	a) Mechanical abrasion	b) Chemical dissolution	c) Electro-chemical action	d) Thermal melting	
8	Which coating process involves the use of a ceramic material?				Understand CO4
	a) Porcelain enameling	b) Electro-forming	c) Vapor deposition	d) Mechanical plating	
9	Which process uses a laser for surface treatment?				Understand CO4
	a) Conversion coating	b) Electro-forming	c) Laser surface texturing	d) Hot dipping	
10	Which rapid prototyping method uses a laser to cure liquid resin?				Understand CO5
	a) Stereo-lithography	b) Fused-deposition modeling	c) Selective laser sintering	d) Laminated-object manufacturing	
11	What is the primary material in Fused Deposition Modeling (FDM)?				Understand CO5
	a) Metal powder	b) Polymer filament	c) Liquid resin	d) Ceramic powder	
12	Which process uses an electron beam for melting powdered material?				Understand CO5
	a) Laser-engineered net shaping	b) Electron-beam melting	c) Multijet modeling	d) Laminated-object manufacturing	

Q. 3	**Solve the following.**		12
A)	Illustrate the feedback system using rotary encoders in CNC machines with a neat sketch.	Apply CO1	6
B)	Explain the working principle, advantages, and limitations of stepper motors used in CNC systems.	Understand CO1	6
Q. 3	**Solve the following.**		12
A)	Describe the axis designation for a CNC vertical milling machine with a neat sketch	Apply CO2	6
B)	Explain the use of G00, G01, and G02 codes with examples in CNC programming	Apply CO2	6
Q. 4	**Solve Any Two of the following.**		12
A)	Describe the construction and working principle of laser beam machining (LBM) with a neat sketch.	Apply CO3	6
B)	Explain the process of wire EDM and its benefits compared to traditional machining methods	Apply CO3	6
Q. 4	**Solve Any Two of the following.**		12
A)	Discuss the basic principles of Physical Vapour Deposition (PVD) and Chemical Vapour Deposition (CVD) processes	Understand CO4	6
B)	Explain the electroplating and electroless plating processes with neat sketches.	Apply CO4	6
	Illustrate the LIGA microfabrication process and its advantages over other micromachining techniques	Apply CO6	6
Q. 5	**Solve Any Two of the following.**		12
A)	Discuss the concept of virtual prototyping and its role in direct manufacturing and rapid tooling.	Evaluate CO5	6
B)	Explain the working principle and process details of selective laser sintering with its advantages and limitations	Apply CO5	6

c)	Describe the fabrication process of MEMS using bulk micromachining with neat sketches.	Apply CO6	
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: BTECH Branch: Mechanical Engineering / Mechanical Engineering(Sandwich)/ Mechatronics/Automation and Robotics/Robotics

Semester : VII

Subject Code & Name: BTMEC7048 : Entrepreneurship Development

Max Marks: 60 Date: 12/02/2025 Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and will be objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per DBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

						(Level/ CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**						12
1	What is the primary function of an entrepreneur?					CO1	1
	a. Investment management	b. Risk-bearing and innovation	c. Employee management	d. Market segmentation			
2	Which of the following is NOT a characteristic of an entrepreneur?					CO1	1
	a. Creativity	b. Risk aversion	c. Visionary leadership	d. Problem-solving skills			
3	A characteristic of small-scale industries (SSI) is					CO1	1
	a. High capital investment	b. Local market focus	c. High export dependency	d. Centralized operations			
4	SSI classifications based on demand are known as					CO1	1
	a. Resource-based industries	b. Technology-based industries	c. Demand-based industries	d. Ownership-structured industries			
5	What is the role of national and state agencies in SSI?					CO1	1
	a. Providing employment benefits	b. Offering financial and technical assistance	c. Limiting industrial growth	d. Restricting market competition			
6	What is the first step in project identification?					CO3	1

	a. Project execution	b. Assessing market demand	c. Preparing a balance sheet	d. Securing financing	
7	Which of the following is an element of project formulation?				CO1
	a. Marketing strategies	b. Feasibility analysis	c. Resource wastage	d. Product outsourcing	
8	What is the main purpose of project appraisal?				CO4
	a. To execute the project plan	b. To evaluate the feasibility and profitability of a project	c. To hire employees for the project	d. To finalize marketing strategies	
9	Which of the following is NOT a project appraisal method?				CO4
	a. Payback Period	b. Average Rate of Return (ARR)	c. SWOT Analysis	d. Discounted Cash Flow (DCF)	
10	What is the primary goal of market segmentation?				CO5
	a. To increase production efficiency	b. To identify and target specific groups of consumers	c. To reduce competition	d. To lower advertising costs	
11	The four components of the marketing mix are:				CO5
	a. Product, Price, Place, Promotion	b. Plan, Profit, Packaging, Promotion	c. Product, Profit, Packaging, Price	d. Place, Promotion, Packaging, Policy	
12	Which of the following is NOT a distribution channel?				CO5
	a. Wholesalers	b. Retailers	c. Manufacturers	d. Competitors	
Q. 2	**Solve the following.**				
A)	Explain the evolution of the concept of an entrepreneur and how it has changed over time.				CO1
B)	What are the key characteristics of small-scale industries (SSI), and why are they significant for economic development?				CO2
Q.3	**Solve the following.**				
A)	Explain the basis for classification of small-scale industries, including resource-based, demand-based, and technology-based types.				CO2

B)	Define a project and explain the importance of project identification and selection in entrepreneurship.	CO3	6
Q. 4	**Solve Any Two of the following.**		12
A)	What are the key elements of project formulation? Discuss their significance in the successful execution of a project.	CO3	6
B)	Define project appraisal and explain its importance in determining the feasibility of a project.	CO4	6
C)	Explain the concept of market segmentation. Discuss the different types of market segmentation and their significance in marketing strategies.	CO5	6
Q.5	**Solve Any Two of the following.**		12
A)	What is the role of packaging in marketing? Discuss how packaging influences consumer behavior and contributes to brand positioning.	CO5	6
B)	Describe the primary functions of an entrepreneur and provide examples to illustrate these functions.	CO1	6
C)	Discuss the ancillary and subsidiary classifications of small-scale industries with suitable examples.	CO2	6
Q. 6	**Solve Any Two of the following.**		12
A)	Explain the concept and significance of project formulation with examples.	CO3	6
B)	Describe the various methods of project appraisal, highlighting the strengths and limitations of each method.	CO4	6
C)	Describe the elements of the marketing mix. How do the 4Ps of marketing contribute to a company's marketing strategy?	CO5	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B. Tech. Branch : Mechanical Engineering/Mechanical Engineering(Sandwitch)

Subject Code & Name: BTMEC704E, Refrigeration and Air Conditioning **Semester: VII**

Max Marks: 60 **Date: 12/02/2025** **Duration: 1 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and in the objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level)/CO	Marks
Q.	**Objective type questions. (Compulsory Question)**		12
1	Moist air at 35°C and 100% relative humidity is entering a psychrometric device and leaving at 25°C and 100% relative humidity. The name of the device is A) Humidifier B) Dehumidifier C) Sensible Heater D) Sensible Cooler	Understanding/CO1	1
2	Sub cooling is beneficial as it: A) Increases specific refrigeration effect B) Decreases work of compression C) Ensures proper cooling D) all of the above	Understanding/CO1	1
3	Compared to compression systems, absorption systems offer the benefits of: A) Higher COPs B) Possibility of using low-grade energy sources C) Lower refrigeration temperatures D) All of the above	Memory/ CO2	1
4	Hermetic compressors are used mainly in smaller systems as they A) Yield higher COP B) Offer the flexibility of using any refrigerant C) Do not require frequent servicing D) can be used under different load conditions efficiently	Memory/ CO2	1
5	The formation of frost on cooling coils in a refrigerator A) reduces power consumption B) improves C.O.P. of the system C) increases heat transfer D) Increases power consumption	Memory/ CO2	1

8	A pressure gauge on the discharge side of a refrigerant compressor reads too high. The reasons will be: A] lack of cooling water B] dirty condenser surface C] water temperature being high D] all of these	Memory/ CO1
8	In a VCR System, the condition of refrigerant before entering the expansion or throttle valve is A] dry vapour B] wet vapour C] very wet vapour D] high pressure saturated liquid	Analysis/ CO2
9	When the lower temperature of a refrigerating machine is fixed, then the coefficient of performance can be improved by A] operating the machine at lower speeds B] operating the machine at higher speeds C] Raising the higher temperature D] lowering the higher temperature	Analysis /CO1
9	In a refrigerating machine, heat rejected is _____ heat absorbed. A) less than B) greater than C) equal to D) can't be predicted	Memory/ CO1
10	If the rating of a refrigeration system is 7,53,000 kJ/h, the tonnage of the system is A) 59.5 B) 214.9 C) 7.53 D) 214163	Understa nd/CO1
13	In a LiBr water absorption refrigeration system, water acts as the A) refrigerant B) absorbent C) both D) equalizer	Analysis/ CO2
1	The refrigerant which is having highest GWP A) R134a B) B) R290 C) C) R11 D) D) NH3	Memory/ CO2
Q. 2	**Solve the following.**	
A)	Clearly differentiate between Refrigeration and Air conditioning process and define the unit of the refrigeration TR.	Understa nd/CO1
B)	An ice plant produces 1000 kg of ice per hour at – 10°C from water available at 30°C. Taking enthalpy of solidification of ice and specific heat of ice below 0E as 335 kJ/kg and 2.09 kJ/kg°C, respectively, obtain refrigeration effect, tonnage and COP for the power consumption of 40 kW.	Analysis/ CO1
Q.3	**Solve the following.**	
A)	Enlist the benefits of using Liquid suction Heat exchanger draw the flow diagram of simple VCC incorporating with Liquid suction Heat exchanger and corresponding P-h representation.	Applicati on/CO2

B)	Calculate the displacement of a compressor having 176 kW capacity if the refrigerating effect is 1097 kJ/kg and volume of the suction gas is 0.2675 m³/kg. Assuming a volumetric efficiency of 75 percent, what cylinder size will be needed if the speed is to be 25 rps and there are to be 6 cylinder with equal bore and stroke.	Analysis/ CO2	6
Q. 5	**Solve Any Two of the following.**		12
A)	Draw and explain the single compressor two evaporators multiple expansion valve system, assisted with the thermodynamic cycle on P-h chart.	Understanding/CO2	6
B)	If the COP of an absorption system is 0.4 when T_g = 350 K, T_a = 300 K and T_e = 250 K, obtain the heat input to the system for 200 ton of refrigeration.	Analysis/ CO2	6
C)	Explain the concept of cascade refrigeration system and draw the simple cascade system with corresponding P-h diagram.	Analysis/ CO2	6
Q. 6	**Solve Any Two of the following.**		12
A)	Define the following with suitable example: Zeotropic refrigerant, Azeotropic refrigerant, Natural refrigerant.	Analysis/ CO2	6
B)	The humidity ratio of atmospheric air at 25 °C is 0.016 kg/kg of dry air. Determine the relative humidity, dew point temperature and sp. heat of moist air. Take barometric pressure as 101 kPa.	Apply/CO3	6
C)	Define the following psychometric properties: Specific humidity, Relative humidity and dew point temperature	Analysis/ CO2	6
Q. 7	**Solve Any Two of the following.**		12
A)	Define the following terms: SHF, GSHF and Bypass factor	Analysis/ CO2	6
B)	28.5 cmm of room air at 25.5 °C DBT and 50% RH is mixed with 28.5 cmm of outside air at 38 °C DBT and 27 °C WBT. Calculate the ventilation load and condition of the air after mixing.	Application/CO3	6
C)	Enlist all the guidelines of the duct design.	Understanding/CO4	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination – 2024

Course: B. Tech. Branch: Mechanical & Allied / Mechatronics/ Automation & Robotics/ Robotics

Semester : VII Subject Code & Name: Intellectual Property Rights (R1MOE705O)

Max Marks: 60 Date: 21/02/2025 Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per DSE or the Course Outcome (CO) on which the question is based is mentioned in [ ] in front of the question.
5. Use of non-programmable scientific calculator is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		(Level/CO)	Marks
Q. 1	Objective type questions. (Compulsory Question)	CO1 to CO6	12
1	Intellectual property primarily refers to: a. Tangible assets b. Creations of the mind c. Natural resources d. Physical products	CO1	1
2	What does the Berne Convention address? a. Patents b. Trademarks c. Copyrights d. Trade secrets	CO2	1
3	Which of these is an example of a geographical indication? a. Coca-Cola logo b. Darjeeling tea c. Harry Potter books d. Apple iPhone	CO1	1
4	What is the validity period of a registered trademark in most jurisdictions? a. 5 years b. 10 years c. 15 years d. 20 years	CO3	1
5	A service mark is used to identify: a. Goods b. Services c. Business names d. Patents	CO3	1
6	A trademark application can be rejected if: a. It is not used in commerce b. It is deceptive or misleading c. It uses a unique font style d. It is expensive to register	CO3	1
7	Derivative works refer to:	CO2	1

a. Copies of the original work
b. Works based on existing copyrighted material
c. Newly published works
d. General creations

8 The "fair use" doctrine allows: CO1
a. Unlimited use of copyrighted works
b. Use for criticism, commentary, teaching, and research
c. Reproduction for commercial gain
d. Transfer of ownership

9 False advertising is a form of: CO1
a. Trademark infringement
b. Patent infringement
c. Unfair competition
d. Copyright violation

10 Which of the following qualifies as a trade secret? CO1
a. A published book
b. A process for manufacturing that is not publicly known
c. A registered trademark
d. A widely used public domain software

11 Intellectual property audits are conducted to: CO1
a. Identify & manage an organization's intellectual property assets
b. Register new trademarks
c. File international patents
d. Establish copyright for unpublished works

12 A major international development in copyright law is: CO1
a. Mandatory use of public domain works
b. Strengthened enforcement of online piracy laws
c. Universal removal of DRM systems
d. Shortened copyright duration

Q. 2 Solve the following.

A) Explain different types of Intellectual Property (IP) giving examples for each type. CO1

B) Explain in brief the functions and key treaties managed by World Intellectual Property Organization (WIPO). CO1

Q.3 Solve the following.

A) What is Trademark? Enlist any four types of Trade Marks with suitable examples. CO2

B) Explain with a flow chart the procedure for acquisition of Trademark in India. CO2

Q. 4 Solve Any Two of the following.

A) Discuss in brief the types of creations which are protectable as CO3

copyright giving one example of each.

B)	Explain any three sections of Copyright Act, 1957.	CO2	6
C)	Explain with suitable examples 'Rights of Reproduction' and 'Right to Perform the Work Publicly' in the context of copyrights.	CO3	6

Q.5 Solve Any Two of the following. 12

A)	Define patent. Enlist any two criteria for patentability. Explain in brief Design Patents and Utility Patents.	CO4	6
B)	Give an overview of Patent Act, 1970 and state how it protects the patentee.	CO4	6
C)	Explain Trade Secrets giving suitable examples. What are internal and external threats related to Trade secrets?	CO4	6

Q. 6 Solve Any Two of the following. 12

A)	Write a note on 'International Trademark law'.	CO6	6
B)	Explain in detail 'Intellectual Property (IP) Audit'.	CO5	6
C)	Discuss new developments in Copyright law in India.	CO6	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech Branch : Computer Engineering/Computer Science and Engineering

Semester :VII

Subject Code & Name: BTCOC701 & Artificial Intelligence

Max Marks: 60 Date: 05/02/2025 Duration: 3 Hr

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and shall be objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/ CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	What is the primary goal of Artificial Intelligence (AI)?		1
	a. To create software that operates without user input b. To develop machines that think and act rationally c. To replace all human jobs with robots d. To simulate physical environments in virtual reality		
2	Which of the following best describes an intelligent agent?		1
	a. A system that solves all problems independently b. A system that perceives its environment and takes actions to achieve goals c. A system that operates only in controlled environments d. A static program designed for a specific task		
3	Which type of environment is the easiest for an AI agent to operate in?		1
	a. Fully observable b. Partially observable c. Dynamic and multi-agent d. Partially observable and		

	and deterministic	and stochastic		continuous

4 Which component of an AI agent determines how it takes actions?

a. Sensors	b. Actuators	c. Performance measure	d. Agent program

Which search strategy expands nodes level by level without considering path cost?

a. Depth-first search	b. Uniform-cost search	c. Breadth-first search	d. Greedy best-first search

What is the primary difference between uninformed and informed search strategies?

a. Informed search strategies use a goal test	b. Informed search strategies use heuristic information	c. Uninformed search strategies are faster	d. Uninformed search strategies use a cost function

Which of the following is an example of a heuristic function in AI?

a. The shortest path in a graph	b. The Manhattan distance in a grid problem	c. A hungry search algorithm	d. A depth-first traversal

8 Which approach to knowledge representation uses graphs or networks to capture relationships?

a. Semantic networks	b. Predicate logic	c. Rule-based systems	d. Procedural knowledge

Which reasoning approach works backward from the goal to determine the necessary steps?

a. Forward reasoning	b. Backward reasoning	c. Deductive reasoning	d. Inductive reasoning

10 What is the primary purpose of Bayesian networks in AI?

a. To represent deterministic relationships	b. To handle reasoning under	c. To perform hierarchical	d. To implement goal stack planning

	between variables	uncertainty	planning			
11	What is the key characteristic of goal stack planning?					1
	a. Tasks are solved in parallel	b. Goals are achieved one by one, using a stack to track them	c. It uses probabilistic reasoning to determine actions	d. It focuses on minimizing uncertainty in knowledge		
12	Which level of natural language processing focuses on sentence context and speaker intentions?					1
	a. Syntactic processing	b. Semantic analysis	c. Discourse and pragmatic processing	d. Morphological processing		
Q. 2	**Solve the following.**					12
A)	Define what an intelligent agent is and describe its components. Provide example of an intelligent agent & explain how it interacts with its environment.					6
B)	Define rationality in detail & discuss the impact of different types of environments in terms of determinism vs. stochastic, fully vs. partially observable on rational decision-making.					6
Q.3	**Solve the following.**					12
A)	Define and explain the functionality of a goal-based agent.					6
B)	What is state space searching? What are the main differences between uninformed and informed search strategies?					6
Q. 4	**Solve Any Two of the following.**					12
A)	What is a utility-based agent, and how it is different from a goal-based agent?					6
B)	What is a constraint satisfaction problem (CSP)? Define it and provide examples of CSPs in real-world applications.					6
C)	Explain Alpha-Beta pruning algorithm with suitable example.					6
Q.5	**Solve Any Two of the following.**					12
A)	What is Quantifier? Differentiate in between universal quantifier & Existential quantifier with its example.					6

B)	Represent the following relationships using ISA notation: i. "A poodle is a type of dog." ii. "A dog is a type of mammal."	
C)	Explain what a Bayesian network is. How does it represent probabilistic relationships among variables?	
Q. 4.	**Solve Any Two of the following.**	
A)	Given fuzzy sets: Set U={5,10,20,25,30,40} Set A={(10,0.2),(20,0.4), (25,0.7), (30,0.9), (40,1)} Set B={(10,0.4),(20,0.1),(25,0.9),(30,0.7),(40,0.6)} Calculate the union, Intersection, Complement of A & B	
B)	What is syntactic processing in natural language? Explain its importance in understanding language.	
C)	What is inductive learning? Give an example of how it can be applied in machine learning.	
	***** End *****	

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech **Branch : Computer Engineering/Computer Science and Engineering**

Semester : VII

Subject Code & Name: BTCOE702 Cloud Computing

Max Marks: 60 **Date: 07/02/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	What is the disadvantage of cloud computing? a. It requires constant internet connection. b. It does not support group collaboration. c. It provides limited storage. d. None of these.		1
2	Cloud computing is a distributed computing model. a. True b. False		1
3	Which is/are true regarding cloud computing? a. It does not provide ubiquitous access b. It provides on-demand network access c. Resources can be released with no management effort d. None of these		1
4	____________ is a program on a host system that lets one computer support multiple, identical execution environments. a. Application program b. Virtual Machine Manager c. Hypervisor d. Operating System		1
5	Which is not the task performed by virtualization? a. To share storage b. To share software environment c. To share network d. To share medium		1
6	____________ requires the support of an operating system to provide virtualization services, means they are the programs managed by operating system. a. Type I hypervisor b. Type II hypervisor		1
7	Customers are provided with applications that are accessible anytime and from anywhere, this comes under the category of ______ a. SaaS b. PaaS c. IaaS d. XaaS		1
8	Which is not a virtual machine technology from the below given options? a. KVM b. Xen c. Vmware d. Aneka		1
9	Virtual machines are example of a. SaaS b. PaaS c. IaaS d. None of these		1
10	In terms of the pricing models introduced by Cloud computing, from below which is not the strategy? a. Pay-as-you-go b. Tiered pricing		1

	c. Per-unit Pricing d. Subscription-based pricing	
11	Cloud Bursting for load balancing between clouds is an example of a. Community cloud b. Public cloud c. Private cloud d. Hybrid cloud	
12	SaaS is useful in case of applications where extremely fast processing of real time data is needed. a. True b. False	
Q.2	**Solve the following.**	
A)	How web applications can be designed using cloud environment? Explain with an example.	Analyze Evaluate
B)	What are the main cloud service models you can choose from when using a cloud service provider? Explain all two.	Remember understand
Q.3	**Solve the following.**	
A)	Why are data centers important? What are the standards in data center design? State the types of data center services.	Remember
B)	By using cloud computing, how vast amount of computing power is achieved from relatively low-cost PCs and servers? Explain with the help of architecture.	Evaluate Apply
Q. 4	**Solve Any Two of the following.**	
A)	What is Software Defined Networking? Explain with its architecture. State its advantages.	Remember Understand
B)	Explain the concept of hypervisor in detail with their types and example systems. List the benefits of virtualization.	Remember Analyse
C)	What is software defined storage? What are some examples of it? How does it work as compared to regular storage?	Remember Understand
Q.5	**Solve Any Two of the following.**	
A)	Explain the concept of a cloud storage service level agreement (SLA). State the primary types of cloud storage. How do cloud storage providers ensure data durability?	Understand Analyse
B)	What are the main types of cloud databases? What does a consumer gain when opting to utilize a virtual machine and set up a database on it?	Remember
C)	Describe the concept of MongoDB. What are the benefits of using MongoDB? Also list the advantages of MongoDB.	Understand
Q.6	**Solve Any Two of the following.**	
A)	Explain the concept of Cloud object storage with its architecture and examples. How to avoid losing the Metadata from the data?	Remember Analyse
B)	What do you know about AWS S3? Explain the architecture of Amazon S3.	Remember Understand
C)	What is OpenStack? What are the three main components of OpenStack? State the benefits of using the OpenStack?	Remember Understand

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech Branch : Computer Engineering/Computer Science & Engineering

Subject Code & Name: BTCOE703C Big Data Analytics Semester : VII

Max Marks: 60 Date: 10/02/2025 Duration: 3 Hr.

Instructions to the students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 8.
4. BT level of question/expected answer as per BT or the Course Outcome (CO) on which the question is based is mentioned in [ ] in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

Q.		(level)/CO	Marks
1	**Objective type questions. (Compulsory Question)**		12
1	Transaction of data of the bank is a type of _____ a) Structure data b. Structured data c. Social data d. Machine Data	L1/CO1	1
2	_____ is the slave/worker node and holds the user data in the form of Data Blocks. a. DataNode b. NameNode c. DataBlock d. Replication	L1/CO2	1
3	The _____ is responsible for allocating resources to the various running applications subject to familiar constraints of capacities, queues a. Manager b. Master c. Tracker d. Scheduler	L2/CO2	1
4	How much will bytes for 1Petabytes a.1024bytes b. 1024^3 bytes c. 1024^4 bytes d. 1024^5 bytes	L3/CO1	1
5	In case of Yet Another Resource Negotiator (YARN), the User Interface provides host and port information. a. Data Node b. Name Node c. Replication d. Resource Manager	L2/CO2	1
6	Kafka is comparable to traditional messaging systems such as a. Impala b. Zookeeper c. ActiveMQ d. BigTop	L2/CO3	1
7	Mapper implementations are passed the JobConf for the job via the _____ method. a. JobConfigure.configure b. JobConfigurable.configurable c. JobConfigurable.configure d. JobMapConfig ure.configure	L3/CO3	1
8	Mahout provides an implementation of a _____ identification	L2/CO4	1

	algorithm which scores collocations using log-likelihood ratio.				
	a.collocation	b.compaction	c.collection	d. Correlation	
9	What is meant by "collection" in MongoDB?				
	a.A group of tables	b. A group of documents	c. A single document	d. A type of index	
10	_____ leverages Spark Core fast scheduling capability to perform streaming analytics.				
	a.MLlib	b. GraphX	c. Index	d. Spark Streaming	
11	Which of the following format is supported by MongoDB?				
	a. JSON	b. XML	c.SQL	d. NoSQL	
12	_____ is a distributed graph processing framework on top of Spark.				
	a. Spark	b. ML library	c.GraphX	d. BSON	
Q. 2	**Solve the following.**				
A)	What is a big data? Discuss the different sources of big data.				L2/CO1
B)	Describe the various characteristics of Big data.				L2/CO1
Q.3	**Solve the following.**				
A)	With neat Sketch explain HDFS architecture in detail.				L2/CO2
B)	Explain the Map Reduce programming Model. Solve the example of Word Count for 1.This is an Apple. 2.An Apple is red in colour.				L3/CO2
Q. 4	**Solve Any Two of the following.**				
A)	Why is Real-time Big Data Pipeline So Important Nowadays?				L2/CO3
B)	Explain the Role and working of APACHE KAFKA.				L2/CO3
C)	Discuss the typical use cases of streaming data.				L2/CO3
Q.5	**Solve Any Two of the following.**				
A)	What is Machine Learning? Why the Machine Learning is important in Big Data processing?				L2/CO4
B)	What is Graph processing? Discuss the Graph processing algorithms in Big data.				L2/CO4
C)	Explain the K-Means clustering Algorithm with example.				L2/CO4
Q. 6	**Solve Any Two of the following.**				
A)	Discuss the advantages of using Java script shell for MongoDB queries				L3/CO5

8]	Explain the CRUD operations in MongoDB with example.	L2/CO1	8
Q	What is the NoSQL database? Explain different types of NoSQL databases.	L2/CO3	8
	*** End ***		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech **Branch: Computer Engineering/Computer Science & Engg**

Subject Code & Name: BTCOEC704C - Blockchain Technology **Semester: VII**

Max Marks: 60 **Date: 12/02/2025** **Duration: 3 Hr**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question expected answer as per OBE or the Course Outcome (CO) for which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		**12**
1	Which of the following is not part of block header in Blockchain? a. Previous Block Hash b. Timestamp c. Merkle Root d. Next block's Merkle root	CO1	1
2	Considering Bitcoin, which of the following components help determine the difficulty of the mining algorithm? a. Transaction Count b. Nonce c. Timestamp d. Public Address	CO1	1
3	Which of the following properties ensure that all local copies in the Blockchain are updated and consistent? a. Privacy b. Consensus c. Security d. Authenticity	CO1	1
4	Which of the following is used to create consensus in a Permissionless Blockchain Environment? a. Proof of Work b. Paxos Consensus c. Byzantine Fault Tolerance d. RAFT Consensus	CO4	1
5	The anonymity of a user in Bitcoin is maintained using a. User's E-mail Address b. User's Private Key c. User's Public Key d. User's Contact No.	CO3	1
6	In distributed consensus, all the non-faulty individuals' decisions must be identical. This property is a. Termination b. Validity c. Integrity d. Agreement	CO1	1
7	In _____, mining a block depends on the number of Bitcoins belonging to miner. a. PoW b. PoS c. PoB d. PoET	CO4	1

8 Which of the following is true in case of a Permissioned Blockchain network — CO1
a. No need of consensus | b. Users are known apriori | c. The network is open | d. Used for cryptocurrency

9 In a Bitcoin network, if difficulty is 54 with the last 2016 blocks mined in 12 days, next difficulty is — CO1
a. 60 | b. 63 | c. 66 | d. 70

10 You are planning to deploy a blockchain solution for your company. For deciding the proper business logic and the transaction format, you need: — CO6
a. Blockchain Architect | b. Blockchain Developer | c. Blockchain Operator | d. Blockchain User

11 A view change operation initiated in PBFT when — CO3
a. Primary Fails | b. Secondary Fails | c. Both a & b | d. After a timeout

12 The cryptocurrency used by Ripple network for cross border payments is — CO6
a. Bitcoin | b. Corda | c. Lumen | d. XRP

Q. 2 Solve the following.

A) Draw and explain layered architecture of Blockchain system. — CO1

B) Write a short note on the following — CO2
i) Markle Tree ii) Digital Signature

Q.3 Solve the following.

A) What is Bitcoin Mining and How Does Bitcoin Mining Work? — CO3

B) Write the difference between Proof of Work and Proof of Stake. — CO4

Q. 4 Solve Any Two of the following.

A) Explain design issues for permissioned Blockchain. — CO5

B) Explain Paxos algorithm in detail. — CO5

C) Compare permissioned blockchain with permissionless blockchain? — CO4, CO5

Q.5 Solve Any Two of the following.

A) What is KYC? Explain the Shared KYC model based on Blockchain. — CO8

B) How does Blockchain benefit food security in future? — CO8

C) Write an overview of supply chain financing using blockchain. — CO9

Q.4 Solve Any Two of the following. **12**

A) Explain Hyperledger Fabric and how does it work? CO7 6

B) Explain writing smart contract using Ethereum? CO7 6

C) What is the difference between Ripple and Corda? CO6 6

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech Branch : Computer Engineering/Computer Science and Engineering

Semester :VII

Subject Code & Name: BTCOE703C & Design Thinking

Max.Marks: 60 Date: 21/02/2025 Duration: 3 Hr.

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and shall be objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question (special answer of the OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level / CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	Which of the following is NOT a phase in the Human-Centered Design (HCD) process? a. Empathize b. Define c. Analyze d. Prototype		1
2	Which of the following models is typically associated with the Design Thinking process? a. Waterfall model b. V-Model c. Human-Centered Design (HCD) process d. Agile Model		1
3	What is the main goal of the Empathize phase in the Design Thinking process? a. To create initial design prototypes b. To test the final product with users c. To deeply understand the users' needs, challenges, and experiences d. To define the business		1
4	What is the primary purpose of Implementation in the Design Thinking process? a. To create detailed prototypes of the design solution b. To understand and visualize the needs, findings, and experiences of the users		1

	c. To test the effectiveness of a solution with real users d. To analyze market trends and customer demographics
5	Which of the following is a key activity that should be done prior to empathy mapping? a. Creating user personas b. Defining the business objectives c. Prototyping a solution d. Conducting market research
	What does creating user personas help achieve in the Empathize phase? a. Define design constraints b. Understand user needs c. Develop prototypes d. Conduct testing
7	What is the primary goal of root cause analysis in the Analyze phase? a. To generate potential solutions b. To identify the underlying causes of a problem c. To develop prototypes d. To conduct user testing
	Which tool is commonly used for ideation and focuses on considering different possible scenarios and their impacts? a. Silent brainstorming b. What-If tool c. TRIZ d. Function modeling
	What is the main purpose of prototyping in the Design Thinking process? a. To validate the business model b. To create a final, polished product c. To explore and test design ideas through iterative models d. To gather market data
10	What is a key benefit of market validation during the design thinking process? a. Reducing development costs b. Ensuring the product aligns with user needs c. Avoiding the need for prototyping d. Finalizing the product design
	What is a primary benefit of iteration in the design thinking process? a. Reducing project timelines b. Refining ideas based on feedback c. Avoiding market validation d. Ensuring a single design solution

12	What is the main focus of innovation management in a company? a. Increasing employee productivity b. Streamlining production costs c. Systematically fostering and implementing new ideas d. Avoiding risks in product development		1
Q. 2	**Solve the following.**		12
A)	What is the difference between design & Engineering Design? How Design turned into Design Thinking?		6
B)	Explain the phases of the Human-Centered Design (HCD) process. How does empathy play a crucial role in the Human-Centered Design (HCD) process?		6
Q.3	**Solve the following.**		12
A)	What is the purpose of empathy maps, and how do they help in understanding user needs?		6
B)	What are the blocks of Empathy? Define various tools & Methods of Empathy.		6
Q. 4	**Solve Any Two of the following.**		12
A)	What is root cause analysis, and how does it help in identifying the underlying problems in the Design Thinking process?		6
B)	Explain the silent brainstorming technique. What are its advantages compared to traditional brainstorming methods?		6
C)	What is TRIZ? Identify and explain five of the inventive principles in TRIZ.		6
Q.5	**Solve Any Two of the following.**		12
A)	What role does prototyping play in the Design Thinking process, and how does it contribute to refining solutions?		6
B)	Explain the use of metaphors and tools like CREATE and What-If in ideation during the Design Thinking process.		6
C)	What is function modeling? How does it contribute to big picture thinking		6
Q. 6	**Solve Any Two of the following.**		12
A)	What are the key differences between a prototype and a final product in terms of purpose and functionality?		6
B)	How can a company measure the success of its innovation management practices in bringing ideas to market?		6
C)	How does the role of innovation management evolve as a product moves through the development stages?		6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B. Tech. Semester: VII

Branch: Electronics & Telecommunication Engineering /Electronics and Communication Engineering

Subject Code & Name: BTETC701 Microwave Engineering

Max Marks: 60 Date: 05/12/2023 Duration: 3 Hr.

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE in the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

					Level/CO	Marks
Q. 1	**Objective type questions. (Compulsory Question)**					**12**
1	The modes of propagation supported by a rectangular wave guide is:				CO1	1
	a. TM, TEM, TE	b. TM, TE	c. TM, TEM	d. TE, TEM		
2	The Smith chart is based on the polar plot of				CO1	1
	a. Voltage reflection coefficient	b. Impedance	c. Reactance	d. Current		
3	A cylindrical cavity resonator can be constructed using a circular waveguide				CO1	1
	a. shorted at both the ends	b. open at both the ends	c. matched at both the ends	d. none of the mentioned		
4	The device used to get the measurement of S parameters of n- port micro wave network is				CO2	1
	a. CRO	b. Network analyzer	c. Attenuator	d. Circulator		
5	Ferrite isolators are ____ port microwave devices.				CO2	1
	a. Eight	b. Three	c. Two	d. Four		
6	Which device is based on Faraday rotation?				CO2	1
	a. Magic Tee	b. E plane Tee	c. Isolator	d. H plane tee		
7	_____ is a single cavity klystron tube that operates as an oscillator by using a reflector electrode after the cavity.				CO3	1
	a. Backward wave oscillator	b. Reflex klystron	c. Travelling wave tube	d. Magnetrons		
8	Klystron operates on the principle of				CO3	1
	a. Amplitude Modulation	b. Frequency Modulation	c. Phase Modulation	d. Velocity Modulation		
9	The range of VSWR in dB indicated in the VSWR meter is _____				CO4	1
	a. 0–2 dB	b. 0–10 dB	c. 0–5 dB	d. 0–100 dB		
10	The Double Minimum method is relevant to the measurement of				CO4	1

	a. low attenuation coefficient	b. high attenuation coefficient	c. high VSWR	d. low VSWR	
11	Stripline can be compared to a:				CO2
	a. Flattened rectangular waveguide	b. Flattered circular Waveguide	c. Flattered co axial cable	d. None of the mentioned	
12	The mode of propagation in a microstrip line is				CO1
	a. Quasi TEM	b. TEM	c. TM	d. TE	
Q. 2	**Solve the following.**				
A)	An air filled rectangular waveguide of inside dimension 7 X 3.5 cm, operates in dominant TE_{10} mode. Find 1. Cut off Frequency 2. Determine the phase velocity of wave in guide at 3.5 GHz 3. Determine the guided wavelength at same frequency.				CO1
B)	Compare transmission lines and waveguides.				CO1
Q.3	**Solve the following.**				
A)	Explain E- plane Tee with help of S matrix.				CO2
B)	Explain working principal of directional coupler with help of neat and labeled diagram. State and explain its performance parameters.				CO2
Q. 4	**Solve Any Two of the following.**				
A)	Explain Construction and Principle of operation of helix type traveling wave tube (TWT) in detail.				CO3
B)	Explain Reflex klystron with help of Applegate diagram.				CO3
C)	Explain Construction and Principle of operation of 8 cavity cylindrical travelling wave magnetron.				CO3
Q.5	**Solve Any Two of the following.**				
A)	Explain Impedance measurement techniques at microwave frequency.				CO4
B)	Define VSWR. Explain the VSWR meter with the help of diagram.				CO4
C)	Explain the power measurement technique with the help of diagram.				CO4
Q. 6	**Solve Any Two of the following.**				
A)	Explain the micro strip lines in detail with neat diagram. State its applications.				CO5
B)	Explain Structural details and applications of Stripline.				CO5
C)	What are the hazards of Electromagnetic Radiation?				CO5

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular and Supplementary Winter Examination – 2024

Course: B. Tech **Semester : VII**

Branch : Electronics & Telecommunication Engineering / Electronics and Communication Engineering/ Electronics Engineering

Subject Code & Name: Fiber Optic Communication / BTETPE703D/BTEXPE703D

Max Marks: 60 **Date:** 07/03/2025 **Duration: 3 Hr**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	Which of the following best describes the vector nature of light? a) Light behaves only as a particle. b) Light behaves only as a wave. c) Light has both electric and magnetic field components that oscillate perpendicular to each other. d) Light is a scalar quantity with no directionality.	CO1	1
2	What is the primary mechanism by which light propagates in a cylindrical dielectric rod? a) Reflection from the outer surface. b) Total internal reflection at the core-cladding interface. c) Absorption and re-emission of light. d) Diffraction at the edges of the rod.	CO1	1
3	Which phenomenon is best explained by the wave model of light? a) Rectilinear propagation. b) Reflection. c) Interference and diffraction. d) Refraction.	CO2	1

6 In a step-index fiber, what determines the number of modes supported? CO1
a) Core diameter and wavelength of light.
b) Cladding thickness.
c) Refractive index of the cladding only.
d) Attenuation coefficient.

7 What is the main effect of dispersion in optical fibers? CO3
a) Increase in signal strength.
b) Broadening of optical pulses.
c) Reduction in attenuation.
d) Increase in bandwidth.

8 Which method is commonly used for the fabrication of optical fibers? CO3
a) Chemical vapor deposition (CVD).
b) Mechanical drawing.
c) Extrusion.
d) Electroplating.

7 Which of the following is a key difference between LEDs and Lasers? CO4
a) LEDs produce incoherent light, while Lasers produce coherent light.
b) LEDs have a narrower spectral width than Lasers.
c) Lasers are less efficient than LEDs.
d) LEDs require an optical cavity to operate.

8 What is the responsivity of a photo-detector? CO4
a) The ratio of output current to input optical power.
b) The ratio of output voltage to input optical power.
c) The ratio of output optical power to input current.
d) The ratio of output optical power to input voltage.

9 What is the main application of directional couplers in optical communication systems? CO4
a) Amplification of signals.
b) Splitting or combining optical signals.
c) Modulating optical signals.
d) Generating optical signals.

10 What is the operating principle of a Raman amplifier? CO4
a) Stimulated emission.
b) Stimulated Raman scattering.
c) Spontaneous emission.
d) Absorption.

11 What does WDM stand for in optical communication systems? CO4
a) Wavelength Division Multiplexing.
b) Waveguide Division Multiplexing.

c) Wideband Division Multiplexing.
d) Wireless Division Multiplexing.

12 Which of the following is a nonlinear effect in fiber optic links? CO5 1
a) Self-phase modulation (SPM).
b) Group velocity dispersion (GVD).
c) Attenuation.
d) Reflection.

Q.2 **Solve the following.** 12

A) Explain the following terms: CO1 6
(a)Numerical Aperture
(b)Total Internal Reflection
(c) Acceptance angle

B) Calculate the numerical aperture, fractional refractive index Δ and acceptance angle of a fiber having the refractive index of core is 1.44 and the refractive index of cladding is 1.40. CO1 6

Q.3 **Solve the following.** 12

A) Derive an expression for number of modes exists in step indexed fiber. Also explain about mode field diameter. CO1 6

B) A graded index fiber with parabolic refractive index has n_1=1.48 and n_2=1.46 if core radius is 25μm. Find the number of modes at 1300nm and 1550nm. CO1/CO2 6

Q.4 **Solve Any Two of the following.** 12

A) Explain the working principles of PIN-diodes CO3 6

B) What is the source of power penalty? Explain CO3 6

C) What is threshold condition for LASER oscillation? Explain in detail. CO3 6

Q.5 **Solve Any Two of the following.** 12

A) Explain the working principles of electro-optic switches and how they are used to control the flow of optical signals. CO3/CO4 6

B) Explain the operating principles of Erbium-Doped Fiber Amplifiers (EDFAs) as optical amplifiers. CO4 6

C) What are WDM networks? Explain the principle of WDM networks in detail. CO4 6

Q. 6 Solve Any Two of the following.

A) What is the principle behind soliton-based communication in optical fibers? CO4

B) Explain the concept of self-phase modulation in detail. CO5

C) Explain how solitons are formed and maintained, and why they are significant for long-distance communication. CO5

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B. Tech

Branch : Electronics Engineering/Electronics &Telecommunication Engineering / Electronics and Communication Engineering

Semester : VII

Subject Code & Name: BTEXDE703E/BTETDE703E, Mobile Communication and Networks

Mid Marks: 60 **Date: 10/02/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in [ ] in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level)/CO	Marks
Q. 1	**Objective type questions. [Compulsory Question]**		12
	What is wireless communication?		1
	a. Sending data from one location to with the use of physical medium b. Sending data from one location to another without the use of physical medium c. Sending data from one location to another without the use of virtual medium d. None of the mentioned		
	Which of the following is not an example of wireless communication?		1
	a. Wi-Fi b. Mobile c. Cordless d. Wireless Computer Parts		
	What is the set of possible carrier frequencies in FH-SS?		1

	a. Hop	b. Hopset	c. Symbols	d. Chips

4. In which of the following mode of propagation the waves are guided along the surface of the earth?

a. Ground wave	b. Sky wave	c. LOS	d. Space wave

5. Space wave propagation reflects the waves with frequencies _____

a. Below 3 GHz	b. 3 to 30MHz	c. Above 30GHz	d. Above 30MHz

6. Equivalent circuit representation of an antenna is _____

a. Series R, L, C	b. Parallel R, L, C	c. Series R, L parallel to C	d. Parallel R, C series to L

7. For an isotropic source, Radiation intensity will be _____ on θ and _____ on Φ.

a. Dependent, independent	b. Independent, independent	c. Independent, dependent	d. Dependent, dependent

8. The FDMA channel carries _____ phone circuit at a time.

a. Ten	b. Two	c. One	d. Several

9. _____ is undesired RF radiation.

a. Intermodulation frequency	b. Intermediate frequency	c. Instantaneous frequency	d. Instrumental frequency

10. Which of the following is not a property of spread spectrum techniques?

a. Interference rejection capability	b. Multipath fading	c. Frequency planning elimination	d. Multiple user, multiple access interface

11	OSSS system spreads the baseband signal by _____ the baseband pulses with a pseudo noise sequence.					1
	a. Adding	b.Subtracting	c. Multiplying	d. Dividing		
12	Which of the following do not impact bit error rate in mobile communication systems?					1
	a. Mobile velocity	b. Channel delay spread	c. Modulation format	d. Base station		
Q. 3	Solve the following.					12
A)	Explain Cell splitting and Concept of frequency channels					6
B)	Explain the significance of fading of fading in mobile environment.					6
Q.4	Solve the following.					12
A)	Explain with the help of diagram, the topologies used in Mobile Ad-Hoc Network (MANET).					6
B)	Explain the Modulation Scheme EPSK in details.					6
Q. 4	Solve Any Two of the following.					12
A)	Explain Dipole antennas & Yagi-Uda antennas in details with diagrams.					6
B)	what is rake receiver in wireless communication, draw its block diagram explain in details					6
C)	Explain GPRS system, draw its architecture.					6
Q.5	Solve Any Two of the following					12
A)	What is fading explain wideband fading models.					6
B)	Explain in detail spatial multiplexing.					6
C)	What is the difference between a bit error rate and a symbol error rate?					6

Q. 6	Solve Any Two of the following.	
A)	Explain in Detail Frequency division multiple access (FDMA)	
B)	Draw the block diagram of GSM architecture and explain Base station subsystem and Network subsystem.	
C)	What are the various methods of delaying handoff in cellular telecommunication? Explain briefly	
	*** End ***	

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular and Supplementary Winter Examination – 2024

Course: B. Tech **Branch: Electronics Engineering/Electronics & Telecommunication Engg/Electronics & Communication Engg** **Semester: VII**

Subject Code & Name: BTETOE704H/BTETKOE704B Entrepreneurship Development

Max Marks: 60 **Date: 12/02/2025** **Duration: 3 Hr.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 is compulsory.*
3. *Attempt any four questions from Question No. 2 to Question No. 6.*
4. *The levels of question (expected answer as per OBE i.e. the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q1	**Objective type questions. (Compulsory Question)**		12
1	Which of the following is NOT a type of entrepreneur? a. Innovator b. Imitative c. Managerial d. Passive	Remember	1
2	Which of the following is NOT a major motive influencing an entrepreneur? a. Achievement b. Fear of failure c. Security d. Desire for independence	Remember	1
3	What is the primary objective of Entrepreneurship Development Programs a. To provide financial assistance to businesses b. To help in the development of entrepreneurial skills and capabilities c. To monitor existing businesses d. To promote government-owned businesses	Understand	1
4	What is the first step in setting up a new business? a. Market survey and research b. Identifying a good business opportunity c. Preparing a project report d. Hiring employees	Understand	1
5	Which of the following is a common classification of business ownership? a. Sole proprietorship b. Cooperative society c. Non-profit organization d. All of the above	Remember	1
6	Which of the following is a source of finance for business? a. Personal savings b. Bank loans c. Venture capital d. All of the above	Remember	1
7	Which tax is levied on the profit of a company or individual? a. Sales tax b. Income tax c. Excise duty d. Value-added tax	Remember	1
8	Which of the following is a characteristic of a joint venture? a. Complete merger of two companies into one b. One business takes over another c. One business loans capital to another d. Two or more businesses collaborate for a specific project or business activity	Understand	1

9 Which of the following is the primary objective of break-even analysis? Understand

a. To calculate total profits | b. To determine the point at which total revenue equals total costs | c. To identify sources of finance | d. To analyze competition

10 Which of the following is a key factor influencing entrepreneurial growth? Understand

a. Social media presence | b. Access to finance | c. Working hours | d. Product design

11 What is the first step in setting up a new business? Remember

a. Hiring employees | b. Identifying a business opportunity | c. Preparing financial statements | d. Registering the company

12 Which of the following is a key difference between an entrepreneur and an intrapreneur? Analyze

a. Entrepreneurs work within a large organization, while intrapreneurs work independently | b. Entrepreneurs take on financial risks, while intrapreneurs do not | c. Intrapreneurs own the business, while entrepreneurs work for others. | d. Intrapreneurs work for the government, while entrepreneurs work for private firms.

Q.2 Solve the following.

A) Differentiate between an entrepreneur and an intrapreneur. Understand

B) Discuss the different types of entrepreneurs with suitable examples. Understand

Q.3 Solve the following.

A) What are Entrepreneurship Development Programs (EDPs)? How are entrepreneurship development programs helpful to an entrepreneur explain? Understand

B) What are the major motives that influence an entrepreneur? Discuss with examples. Understand

Q.4 Solve any Two of the following.

A) Describe the steps involved in setting up a small business. Understand

B) Explain the various ownership structures (e.g., sole proprietorship, partnership, private limited company). Understand

C) Define small enterprises and explain how they are classified. Also describe the key characteristics of small enterprises. Understand

Solve Any Two of the following. 12

Define term loans and explain their significance for small enterprises. Also Discuss the concept of capital structure.	**Understand**	6
Discuss the internal and external sources of finance available to small enterprises, with examples.	**Understand**	6
Explain the basics of income tax and its implications for small enterprises. Discuss excise duty and sales tax (now replaced by GST in India).	**Understand**	6

Solve Any Two of the following. 12

Discuss the role of financial, technical, and infrastructural support provided by the government to small businesses.	**Understand**	6
Define business incubators and explain their role in supporting small enterprises. Also Discuss the key services provided by business incubators.	**Understand**	6
Explain any three of the following growth strategies with examples a) Expansion b) Diversification c) Joint Venture d) Merger e) Subcontracting	**Understand**	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024 (Course: B.Tech.)

Branch : Electronics and Telecomm. Engg./ Electronics and Comm. Engg./ Electronics Engg.

Subject Code & Name: BTHM2120 Engineering Economics and Financial Mathematics Semester : VII

Max Marks: 60 **Date:** **Duration: 3 Hr.**

Instructions to the students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and should be objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per CO/BT or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		CO	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		**12**
1	Firms ___ goods and services in the economy. a) demand b) supply c) invest d) consume	CO1	1
2	The law of demand states that as the price of a good increases, the quantity demanded ___. a) increases b) decreases c) remains constant d) fluctuates	CO1	1
3	The equilibrium price is determined at the point where supply and demand ___. a) diverge b) intersect c) decrease d) stabilize	CO1	1
4	Sunk costs are expenses that cannot be ___. a) calculated b) recovered c) reduced d) controlled	CO1	1
5	The ratio of function to cost in value engineering is called a) Performance b) Value c) Efficiency d) Reliability	CO2	1
6	A company decides to buy instead of making when it lacks _____. a) Space b) Equipment c) Demand d) Experience	CO2	1
7	The sinking fund factor helps in _____. a) Saving b) Spending c) Lending d) Borrowing	CO2	1
8	A revenue dominated cash flow focuses on maximizing _____. a) Savings b) Costs c) Returns d) Taxes	CO2	1
9	A project is accepted if its Present Worth is _____. a) Zero b) Negative c) Positive d) Constant	CO2	1
10	Which maintenance type is performed at regular intervals to prevent failure? a) Corrective b) Predictive c) Preventive d) Breakdown	CO2	1
11	Which maintenance approach allows assets to run until they fail completely? a) Preventive b) Breakdown c) Condition-based d) Predictive	CO3	1
12	Which method applies an equal amount of depreciation each year? a) Declining b) Straight c) Sinking d) Sum	CO3	1

Q. 2 Solve the following.

A) Explain the circular flow model of an economy with suitable examples. CO1

B) Describe the law of demand and supply with a suitable example. CO1

Q.3 Solve the following.

A) Define the make-or-buy decision. Describe criteria for make and buy. CO2

B) Ramesh wants to save money for his daughter's college education, which will cost Rs. 5,00,000 after 10 years. He has access to a fixed deposit scheme offering 6% annual interest. How much should Ramesh deposit today to ensure he has Rs. 5,00,000 after 10 years? CO2

Q. 4 Solve Any Two of the following.

A) Define cash flow. Describe types of cash flow with examples of each. CO2

B) Describe the concept of the Present Worth (PW) Method with example. CO2

C) A renewable energy project has: CO3

- Initial investment: Rs 5 crore
- Annual income: Rs 1.5 crore for 5 years
- Salvage value at the end: Rs 1 crore
- Discount rate: 10%

Calculate its present worth.

Q.5 Solve Any Two of the following.

A) Discuss different types of maintenance with examples. CO3

B) Define economic life of an asset. What factors affect its determination? CO3

C) What do you mean by capital recovery? Describe the concept of Challenger vs. Defender. CO3

Q.6 Solve Any Two of the following.

A) What is depreciation? Explain its significance in financial planning and asset management. CO4

B) Describe the Straight Line Method (SLM) of depreciation with an example. CO4

C) A textile factory purchases a machine for Rs. 10,00,000. The depreciation rate is 20% per year. Calculate the book value of the machine at the end of 3 years using the Declining Balance Method. CO4

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: BTech **Branch : Electical Engineering / Electrical Engineering (Electronics and Power/ Electrical & Electronics Engg. / Electrical & Power**

Subject Code & Name: BTEEC701 High Voltage Engineering **Semester: VII**

Max Marks: 60 **Date: 05/02/2025** **Duration: 3 Hr.**

Instruction to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		Level/CO	Marks
Q.1	**Objective type questions. (Compulsory Question)**		12
1	The accuracies obtained with the numerical computation of electric fields is usually (a) 0.1% (b) 2 to 5% (c) 8 to 10% (d) can be very high		1
2	Most suitable numerical method to solve electrostatic field problems is (a) Laplace equation method (b) charge simulation method (c) finite difference method (d) resistance analog method		1
3	Streamer mechanism of breakdown explains the phenomena of electrical breakdown of (a) very short spark gaps (b) when pd is less than 1000 torr-cm (c) very long gaps where field is non-uniform (d) spark gaps subjected to impulse voltages.		1
4	Minimum sparking potential of air is about (a) 300 V (b) 4.4kV (c) 90 V (d) 325 V		1
5	The breakdown strength of mineral oil is about (a) 20 kV/mm (b) 50 kV/mm (c) 3 kV/mm (d) 30 to 40 kV/mm		1
6	Which of the following liquids has the highest breakdown strength? (a) Mineral oils (b) Silicone oils (c) Chlorinated hydrocarbon oils (d) Polyolefins or esters		1
7	The operating temperatures of polyethylene insulation is (a) −30° to 50° (b) −60° to 150° (c) −50° to 80° (d) 0° to 100°		1

8 Electrochemical breakdown and deterioration of insulating material is due to

(a) temperature rise | (b) oxidation, hydrolysis or some other chemical action | (c) only due to hydrolysis and moisture effects | (d) none of the above

9 For HV cable insulation, the materials used are

(a) glass and ceramic | (b) silicone rubber | (c) XLPE | (d) paper-oil insulation

10 Gas insulation is nowadays used in

(a) generators | (b) motors | (c) transformers | (d) circuit breakers and substations

11 The voltage efficiency of a normal impulse generator for generation of switching impulses is

(a) less than 30% | (b) 80 to 90% | (c) 40 to 60% | (d) 10 to 90

12 Typical capacitive loading on a testing transformer rated for 100 kVA, 250 kV will be about

(a) less than 1 nF | (b) 3 to 5 nF | (c) 10 to 50 nF | (d) 50 to 100 nF

Q. 2 Solve the following.

A) Explain Poisson's equation in detail.

B) Explain the terms surge voltage and discuss the distribution on it.

Q.3 Solve the following.

A) Explain the Streamers theory of breakdown in air at atmospheric pressure.

B) Explain Townsend's criterion for breakdown in electronegative gases.

Q. 4 Solve Any Two of the following.

A) Discuss the effect of the Following parameters on breakdown strength of liquid

1) Moisture content in oil

2) Solid impurities

B) Explain the Different mechanism by which breakdown occurs in solid dielectrics?

C) Explain the phenomenon of treeing and tracking.

Q.5 Solve Any Two of the following.

A) Describe impulse voltages standard impulse waves shapes and its equations in detail.

Explain the lightning phenomenon in Detail ?	CO2	6
Write a short note on equipment insulation level & co-ordination of Substations.	CO3	6

Solve Any Two of the following. 12

What are the different non destructive testing are connected to the testing of insulators bushing ,isolators ,C.B. ,Cables, Transformers and surge diverters.	CO1	6
What are the different IES and IS codes adopted for the measurement of high voltage tests on electrical appliances :	CO2	6
1)Power apparatus		
2)Electric motor		
Write a short note on surge diverter.	CO3	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B. Tech Branch: Electrical Engineering / Electrical Engineering (Electronics and Power)/ Electrical & Electronics Engg. / Electrical & Power Engineering

Subject Code & Name: (BTEEC702_V20) High Voltage Engineering Semester : VII

Max Marks: 60 Date: 07/02/2025 Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and multiple objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculator is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		**12**
1	Which dielectric materials are used in high-voltage equipment to serve the dual purpose of insulation and heat dissipation? (a) Solids (b) Liquids (c) Air (d) Gas	(L1/CO1)	1
2	Average electrical field is the magnitude of electrical field (a) at midpoint between conductors (b) ratio of potential difference to the distance between the conductors (c) at surface of the lower potential electrode (d) ratio of potential difference to half the distance between the conductors	(L2/CO2)	1
3	An electronegative gas is one in which (a) positive ions are formed along with electrons (b) gas has inherent negative charge (c) gas is ionized due to electron bombardment (d) electron gets attached to form negative ion	(L1/CO3)	1
4	Ionization coefficients α, γ are functions of (a) applied voltage (b) pressure and temperature (c) electric field (d) ratio of electric field to pressure	(L2/CO3)	1

5	The parameters that affect the breakdown strength of liquids is (a) hydrostatic pressure and temperature (b) dissolved impurities (c) dielectric constant (d) pressure, temperature, dissolved impurities and suspended particles.	[L4/CO1]	1
6	Paper insulation is mainly used in (a) cables and capacitors (b) transformers (c) rotating machines (d) circuit breakers	[L1/CO1]	1
7	Material that is used in surge arresters for EHV and UHV power systems is (a) silicon carbide (b) zinc oxide (c) aluminium oxide (d) metal oxides	[L4/CO2]	1
8	Overhead transmission lines are protected from lightning overvoltages (a) by counter poise wires (b) by protector tubes (c) by ground or shield wires above the main conductors (d) by shunt reactors.	[L2/CO3]	1
9	Tesla coil is used for (a) generation of sinusoidal output voltages (b) generation of very high voltages (c) generation of rectangular voltages (d) generation of high frequency ac voltages	[L1/CO3]	1
10	A generating voltmeter is used to measure (a) impulse voltages (b) ac voltages (c) dc voltages (d) high frequency ac voltages	[L1/CO3]	1

11	Fault location in an HV cable is done by (a) voltage withstand test (b) partial discharge scanning test (c) life tests (d) impulse testing	(L4/CO3)	1
12	Most important tests conducted on isolators and circuit breakers are (a) voltage withstand tests (b) short circuit tests (c) high current tests (d) temperature rise tests.	(L4/CO4)	1
Q. 2	**Solve the following.**		12
A)	What are surge voltages and how are they distributed in the windings of a power apparatus like a transformer winding?	(L2/CO1)	6
B)	Define Townsend's first and second ionization coefficients. How is the condition for breakdown obtained in a Townsend discharge?	(L5/CO2)	6
Q. 3	**Solve the following.**		12
A)	Explain with neat sketch, the time lags for breakdown in gases.	(L4/CO2)	6
B)	What is Paschen's law? Write a short note on glow discharge and arc discharge.	(L2/CO3)	6
Q. 4	**Solve Any Two of the following.**		12
A)	Explain the conduction and breakdown in pure liquids.	(L4/CO4)	6
B)	Explain the phenomenon 'treeing and tracking' in solid insulating materials under electrical stress. How does it lead to breakdown?	(L2/CO4)	6
C)	Explain the applications of insulating materials in power transformers.	(L2/CO3)	6
Q. 5	**Solve Any Two of the following.**		12
A)	Derive the expressions for the voltage and current waves on long transmission lines and obtain the surge impedance of the line.	(L5/CO5)	6
B)	What is meant by insulation co-ordination? State and explain the protective devices chosen for optimal insulation level in a power system?	(L4/CO4)	6

7×4=24

	c)	Give the Marx circuit arrangement for multistage impulse generators. How is the basic arrangement modified to accommodate the wave time control resistances?	(L2/CO4)	6
5.		**Solve Any Two of the following.**		12
	a)	Describe with a neat sketch, the working of a Van de Graaff generator. What are the factors that limit the maximum voltage obtained?	(L3/CO4)	
	b)	Explain capacitance voltage transformer (CVT) with a neat sketch. What are its advantages and disadvantages?	(L3/CO5)	
	c)	Explain the method of impulse testing of high voltage transformers. What is the procedure adopted for locating the failure?	(L3/CO3)	6
		*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech.

Branch: Electrical Engineering / Electrical Engineering (Electronics and Power)/ Electrical & (Instrumentation Engg. / Electrical & Power Engineering

Semester : VII

Subject Code & Name: Power System Operation and Control (BTEEC702)

Max. Marks: 60

Date: 07/03/2025

Time: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of questions/expected answers as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		Level(CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	What is the main cause of voltage instability?	L1	1
	a. Generators | b. Transformers | c. Loads | d. Line Losses		
2	Reactive power is measured in ____	L1	1
	a. VA | b. VAR | c. W | d. VAS		
3	Transmission losses in a line are _____	L1	1
	a. Directly Proportional to Voltage V | b. Inversely proportional to Voltage V | c. Directly Proportional to V^2. | d. Inversely proportional to V^2.		
4	Which type of generator is used in Power System for absorbing Reactive Power?	L1	1
	a. Synchronous Generator | b. Diesel Generator | c. Solar Generator | d. Brushless Generator		
5	What is the primary objective of Load Frequency Control (LFC) in a power system?	L2	1
	a. To regulate Voltage Levels | b. To maintain a stable frequency | c. To increase power flow | d. To minimize transmission losses		

6	Which of the following is a characteristic of a brushless excitation system?				L2	1
	a. Uses a separate DC generator	b. Uses a rotating rectifier	c. Uses a static power converter	d. Requires a separate exciter generator		
7	Which of the following types of excitation systems is most commonly used in modern power plants?				L1	1
	a. Self excited	b. Separately excited	c. Brushless excitation	d. Static Excitation		
8	Which of the following types of stability is concerned with the ability of the power system to return to its original state after a disturbance?				L2	1
	a. Steady state stability	b. Transient stability	c. Dynamic stability	d. Small signal stability		
9	What is the primary objective of economic operation of power system?				L1	1
	a. To minimize transmission losses	b. To maximize generation capacity	c. To minimize operating cost	d. To ensure reliable operation		
10	Which of the following methods is used to improve the voltage Stability of a power system?				L2	1
	a. Increasing the reactive power support	b. Reducing the transmission line impedance	c. Implementing automatic voltage regulators	d. Increasing the generation capacity		
11	What is the purpose of unit commitment in economic operation of a power system?				L2	1
	a. To determine the optimal generation schedule	b. To calculate the transmission losses	c. To evaluate the stability of the system	d. To determine which generating units to commit to meet the load demand		

12	What is the main objec ve of op mal power ow (OPF) in economic opera on of a power system? a. To minimize transmission losses b. To maximize genera on capacity c. To minimize opera ng cost d. To op mize power ow in the transmission network	L1	1
Q.2	Solve the following.		12
A)	Enlist the methods of Voltage Control and explain any one of them.	L2	6
B)	Explain the Opera on of a Synchronous Condenser with neat diagram.	L3	6
Q.3	Solve the following.		12
A)	Classify power system stability. Explain in detail.	L2	6
B)	Derive swing equa on for a synchronous generator.	L3	6
Q.4	Solve Any Two of the following.		12
A)	What are the di erent elements of an excita on system? Explain with the help of block diagram.	L2	6
B)	Explain the construc on and working of DC excita on system with neat sketch.	L3	6
C)	What are control and protec ve func ons of excita on system? Explain with block diagram.	L2	6
Q.5	Solve Any Two of the following.		12
A)	Explain the construc on and working of speed governing mechanism with neat diagram.	L3	6
B)	With a neat block diagram explain the load frequency control of the synchronous machine.	L3	6
C)	Explain the construc on and working of sta c VAR compensator.	L2	6

Q. 5	Solve Any Two of the following.		12
A)	Explain the objec ves, constraints and solu on methods associated with Hydrothermal Scheduling.	L2	6
B)	Derive the condi on for economic load dispatch when transmission losses are neglected.	L3	6
C)	Derive the expression for transmission line losses in terms of power plant genera on when two units are supplying the load. Also write the equa on of loss coe cients.	L3	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech Branch : Electrical Engg/Electrical Engg (Electronics & Power)/Electrical & Electronics Engineering/Electrical & Power Engineering

Semester : VII

Subject Code & Name: BTEEPE703A Energy Audit & Conservation

Max Marks: 60 Date: 10/02/2025 Duration: 3hr.

Instructions to the Students:

i. Each question carries 12 marks.

ii. Question No. 1 will be compulsory and must be objective-type questions.

iii. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.

iv. The level of question/expected answer as per DBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.

v. Use of non-programmable scientific calculators is allowed.

vi. Assume suitable data wherever necessary and mention it clearly.

		(CO/level)	Marks
Q.1	Objective type questions. (Compulsory Question)		12
a.	Which of the following energy source is derived from earth's heat ?	CO1/K1	1
	a. Biomass / b.Hydropower / c. Geothermal energy / d. Natural gas		
b.	What is the main goal of Paris agreement ?	CO1/K1	1
	a. To eliminate the use of fossil fuel. / b. To limit global warming to below 2°c compared to pre industrial level / c. provide funding for nuclear energy project. / d. To enforce carbon taxes world wide.		
c.	Which industrial sector is the largest consumer of energy globally ?	CO1/K1	1
	a.Transportation / b.Construction / c.Manufacturing / d. Agriculture		
d.	Which of the following energy source is commonly used in steel industry?	CO2/K1	1
	a.Hydropower / b. Coal / c. Wind energy / d.Solar energy		
e.	What is the main benefit of using renewable energy in industries ?	CO3/K1	1

	a. Higher energy consumption	b. Increase in production cost	c. Reduction in greenhouse gas emission	d. Reliance on private resources	CO1/K1	1
6	In rural areas, which of the following is a traditional energy source for cooking					
	a. Natural gas	b. Coal	c. Biogas	d. Electricity	CO3/K1	1
7	The use of solar water heaters in the residential sector primarily helps to :					
	a. Reducing reliance on fossil fuels	b. Generating electricity	c. Improving water quality	d. Increasing water consumption	CO1/K1	1
8	In the commercial sector, the largest share of energy consumption is typically attributed to :					
	a.Heating, ventilation & air conditioning (HVAC)	b. Lighting	c. Refrigeration	d. Office equipment	CO4/K1	1
9	Which equipment is commonly used during energy audit to measure power consumption					
	a. Thermometer	b. Barometer	c. Power meter	d. Multimeter	CO4/K1	1
10	Which of the following sectors typically benefits most from energy audits ?					
	a. Industrial	b. Residential	c. Agricultural	d.All of above	CO5/K1	1
11	In utilities which equipments energy efficiency is critical for reducing overall energy consumption ?					
	a. HVAC System	b. Lighting system	c. Transformers & distribution system	d. None of above	CO5/K1	1
12	Which international organization often funds energy investment projects in developing countries?					
	a. World Bank	b. Greenpeace	c. International energy agency (IEA)	d.International monetary fund (IMF)	CO5/K1	1

Q.3	**Solve the following.**		
A)	Explain the Paris agreement in detail.	CO1/K2	12
B)	State classification of energy source with one example for each.	CO1/K3	6
			6
Q.4	**Solve the following.**		
A)	Enlist energy conservation techniques in lighting system.	CO2/K2	12
B)	Explain various energy conservation opportunities in air conditioning system.	CO2/K2	6
			6
Q. 4	**Solve Any Two of the following.**		12
A)	What are the different form of energy used in agriculture.	CO3/K2	6
B)	Explain UNFCCC in India.	CO3/K2	6
C)	Explain different form energy in municipal sector.	CO3/K3	6
Q.5	**Solve Any Two of the following.**		12
A)	What is need of energy audit? Define the energy audit as per the energy conservation act 2001 .	CO4/K2	6
B)	Explain the following instrument used in energy audit with their application: i) Lux meter ii) Combustion gas analyser	CO4/K3	6
C)	What are phases of energy audit ? Give principles of energy audit.	CO4/K2	6
Q. 6	**Solve Any Two of the following.**		12
A)	Explain implementation & monitoring of energy conservation project.	CO5/K2	6
B)	What is NVP of project life 2 years which requires an investment of Rs.50000 and yield Rs.30000 in 1st year and 40000 in the next year, if the interest rate is 10%.	CO5/K3	6
	Why it is important to reduce transmission & distribution losses? Write a note on distribution & utilization.	CO5/K3	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B. Tech. Branch : Electrical Engineering Semester : VII

Subject Code & Name: BTEEC7088 ELECTRICAL SYSTEM DESIGN FOR BUILDING

Max Marks: 60 Date: 10/02/2025 Duration: 3 Hr

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and based on objective type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE or the Course Outcome (CO) on which question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

						Level(CO)	Mar ks
Q. 1	**Objective type questions. (Compulsory Question)**						12
1	A house wiring plan includes a circuit for a 1500 W, 230 V appliance. What is the approximate current that the circuit needs to carry?					Understand	1
	a. 0.65 A	b. 6.5 A	c. 65 A	d. 0.065 A			
2	What is the primary factor that determines the size of conductors used in house wiring?					Remember	1
	a. The color of the wires	b. The length of the wiring run and the current it needs to carry	c. The aesthetic appeal of the wires	d. The brand of the wires			
3	What is the purpose of a fuse or circuit breaker in an electrical circuit?					Understand	1
	a. To regulate the voltage	b. To prevent the circuit from overcurrent	c. To control the flow of current	d. To connect appliances to the circuit			
4	VIR stands for:					Remember	1
	a. Vulcanized Indian Rubber	b. Vulcanized Insulated Rubber	c. Varnished Impregnated Rubber	d. Volatile Insulating Rails			

7	MCB stands for:					1
	a. Main Circuit Breaker	b. Miniature Circuit Breaker	c. Molded Case Breaker	d. Master Control Board		
8	The diversity factor is always:				Understand	1
	a. Greater than 1	b. Less than 1	c. Equal to 1	d. Equal to the demand factor		
9	Which cable type is generally preferred for underground installations due to its moisture resistance?				Remember	1
	a. PVC insulated	b. PVC insulated	c. Rubber insulated	d. Paper insulated		
10	Which of the following is a common piece of equipment found in a substation?				Remember	1
	a. Transformers	b. Circuit breakers	c. Isolators	d. All of the above		
11	What is the primary purpose of earthing in an electrical system?				Remember	1
	a. To improve efficiency	b. To provide a path for fault current	c. To reduce voltage drop	d. To prevent power outages		
12	Which type of lamp is known for its high efficiency and long lifespan?				Remember	1
	a. Incandescent lamp	b. Fluorescent lamp	c. Mercury vapor lamp	d. Halogen lamp		
13	Which of the following is the FIRST step in residential electrical wiring planning?				Remember	1
	a. Cable sizing	b. Load calculation	c. Layout design	d. Circuit design		
14	Which software is commonly used for creating electrical layouts and diagrams?				Understand	1
	a. Microsoft Word	b. AutoCAD	c. Excel	d. PowerPoint		

Q.1	**Solve the following.**		12
A)	Briefly explain three key factors to consider when selecting underground cables.	Remember	6
B)	Explain the importance of limiting voltage drop in electrical wiring systems. What are the potential consequences of excessive voltage drop?	Remember	6
Q.2	**Solve the following.**		
A)	Explain the advantages and disadvantages of lead alloy sheathing	Remember	
B)	Explain the advantages of using MCBs over fuses	Understand	12
Q.3	**Solve Any Two of the following.**		
A)	Explain the factors to consider when selecting a cable for a particular installation	Understand	6
B)	What are the different types of substations? Briefly describe each type.	Remember	6
C)	Draw a single-line diagram (SLD) for a pole-mounted substation.	Understand	
Q.4	**Solve Any Two of the following.**		
A)	Describe the requirements for effective earthing, including soil resistivity, electrode type, and earth resistance.	Understand	12
B)	Explain the procedure for mounting CT and PTs, emphasizing safety precautions and connection details.	Understand	
C)	Explain the advantages and disadvantages of metal halide lamps compared to mercury vapor lamps.	Remember	6
Q. 5	**Solve Any Two of the following.**		12
A)	Explain the general characteristics of LED lamps, including their advantages and disadvantages.	Remember	
B)	Discuss the role of computer-aided design (CAD) software in electrical design	Understand	
C)	Describe the typical steps involved in planning the electrical wiring for a residential building.	Understand	
	*** End ***		

Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: B.Tech Branch : Electical Engineering / Electrical Engg (Electronics & Power /Electrical & Electronics Engg/Electrical & Power Engineering Semester :VII

Subject Code & Name: Mechatronics & BTEEOE704C

Max. Marks: 60 Date: 31/12/2024 Duration: 3 Hr.

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and based on objective type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per BTE and the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**		12
1	In mechatronics, are stepper motors an actuator or a sensor or both?	Co1	1
	a. Actuator b. Sensors c. [illegible] d. none		
2	Which of the following is not a sensor?	Co2	1
	a. Strain gauge b. Switches c. [illegible]meter d potentiometer		
3	How many primary types of control systems exist in mechatronics?	Co1	1
	a. 5 b.4 c. 2 d. 1		
4	Which kind of sensor in mechatronics can detect the presence or absence of items or targets within its sensing range without requiring physical contact	Co2	1
	Displacement sensor Proximity sensor Position sensor Velocity sensor		
5	An application called ____ is used to convert the assembly-level language to binary machine-level code.	Co1	1
	a. assembler b. . compiler c. Web d. none		

6	The 8085 microprocessor includes how many general purpose registers?				CO1
	a. 2	b. 3	c. 5	d. 6	
7	The 8085 microprocessor is—— bit processor				CO1
	a.8	b. 16	c.32	d. 64	
8	Multiplexers are capable of handling which kind of applications?				CO1
	a. Analog application	b. Digital applications	c. both	d. none	
9	Which of the following is not a fundamental building component of mechanical systems which includes forces and straight-line displacement without rotating?				CO1
	a.Spring	b.Capacitance	c. Dashpot	d. Mass	
10	In mechatronics, ____ control refers to a control system that can dynamically update its parameters or behavior in response to changes in the system or its surroundings.				CO1
	a. Velocity control	b. Adaptive control	c. Digital control	d. Gain control	
11	PLC supports				CO1
	a . ladder program	b.network program	c. Binary program	d. none	
12	Which generation robots are repeating, servo-driven, pick-and-place, or point-to-point kind?				CO1
	a. 1st	b.2 nd	c. 3	d. 4 th	
Q. 2	**Solve Any Two the following.**				
A)	What is Mechatronics ? Explain scope of Mechatronics.				CO1 4
B)	Differentiate between open loop control system and close loop control system.				CO1 4
C)	Write short note on pneumatic controller.				CO1 4

Q.3	**Solve Any Two the following.**		12
A)	State selection parameters of sensors and transducers.	CO2	6
B)	Explain construction and working of LVDT.	CO2	6
C)	What is ultrasonic sensor? Explain its working with neat sketch.	CO2	6
Q.4	**Solve Any Two of the following.**		12
A)	Explain kinematics chains in mechanical system.	CO3	6
B)	Differentiate between belt drives and chain drives.	CO3	6
C)	Explain directional control valves.	CO3	6
Q.5	**Solve Any Two of the following.**		12
A)	Explain I/O mode and HSR mode of 8255 PPI.	CO4	6
B)	Interface DAC with 8085 system and write program to generate square wave.	CO4	6
C)	Interface stepper motor with 8085 and write program to rotate in clock wise direction.	CO4	6
Q.6	**Solve Any Two of the following.**		12
A)	What is PLC? State selection parameters of PLC.	CO5	6
B)	Explain input and output processing structure of PLC.	CO5	6
C)	Give classification of Robots. Explain Robot drive system.	CO5	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Branch : Electrical Engineering / Electrical Engg (Electronics & Power) Electrical

Course: B.Tech

Programme: Engg/Electrical & Power Engg

Semester : VII

Subject Code & Name: BTEEC704B Electrical Traction and Utilization

Duration: 3 Hr

Max. Marks: 60

Dated 12/02/2025

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question-expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
5. Use of non-programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

					(Level/CO)	Marks
						12
Q1	Objective type questions. (Compulsory Question)					
1	Arc direct arc furnace which of the following has highest value?				Understand	1
	a. Current	b. Voltage	c. Power factor	d. All of the above		
2	..... is used for heating non-conducting materials				Understand	1
	a. Eddy current heating	b. Arc heating	c. Induction heating	d. Dielectric heating		
3	The illumination at the various points on a horizontal surface illuminated by the same source varies as					1
	a. $\cos\theta$	b. $\cos^2\theta$	c. $\cos^3\theta$	d. $1/\cos\theta$		
4	due to Moonlight illumination is nearly					1
	a. 500 lumen/m^2	b. 50 lumen/metre^2	c. 0.5 lumen/m^2	d. None of the above		
5	Mercury vapour lamp gives light of					1
	a. Green colour light	b. Pink colour light	c. Greenish blue colour light	d. White colour light		
6	Luminous flux is				Understand	1
	a. The rate of energy radiation	b. The part of light energy	c. Measured in lux	d. All of the above		

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	in the form of light waves	radiated by sun that is received on earth				
9	Projection welding is.....					
	a. Multi-spot welding process	b. Continuous spot welding process	c. Used to fasten joints	d. Used to make cantilevers		
10	In underground traction the supply system is					
	a. 500 V to 3000 V DC	b. 25KV, 50 HZ	c. 50 KV, 50 HZ	d. 33 KV, 25 HZ		
11	Low-frequency operation of overhead line in traction system					
	a. Increases the spacing between substations	b. Reduces the spacing between substations	c. Spacing is independent of frequency of supply	d. All of the above		
12	Quadrilateral speed time curve pertains to which of the following services ?					
	a. Main line service	b. Urban service	c. Suburban service	d. Urban and suburban service		
13	Longer coasting period for a train results in				Understand	1
	a. Higher schedule speed	b. Lower specific energy consumption	c. Higher retardation	d. Higher acceleration		
14	Which of the following is an advantage of electric traction over other methods of traction ?				Understand	1
	a. Faster acceleration	b. No pollution problems	c. Higher braking action	d. All of the above		
Q.2	**Solve the following.**					
A)	Explain resistance heating, list out the advantages of electrical heating.				Remember	12
B)	Explain in detail any one method of welding.				Understand	4
						4
Q.3	**Solve the following.**					
A)	State faradays laws of electrolysis & Explain application of electrolysis.					12
B)	Write a short note on Accumulators & cell.				Understand	4
					Remember	4

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Regular/Supplementary Winter Examination – 2024

Semester : VII

per B.Tech

Branch: Electrical Engineering / Electrical Engineering (Electronics and Power)/Electrical & Electronics Engg. / Electrical & Power Engineering

Course Code & Name: BTEEDE7050 Electric and Hybrid Electric Vehicles

Date: 23/02/2025

Max. Marks: 60

Duration: 3 Hr.

Instructions to Students:
1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.
4. The level of question/expected answer as per OBE and the Course Outcome (CO) on which the question is framed is mentioned in front of the question.
5. Use of programmable scientific calculators is allowed.
6. Assume suitable data wherever necessary and mention it clearly.

		(Level/CO)	Marks
1.	**Objective type questions. (Compulsory Question)**		12
i.	Which of the following is a primary reason for the development of hybrid and electric vehicles? a) To reduce vehicle manufacturing costs b) To increase vehicle speed c) To mitigate environmental impacts d) To simplify vehicle design	(L1/CO1)	1
ii.	Which parameter is NOT considered in the mathematical modeling of vehicle performance? a) Aerodynamic drag b) Rolling resistance c) Engine displacement d) Transmission characteristics	(L1/CO1)	1
iii.	Which of the following is NOT a hybrid drive-train topology? a) Series b) Parallel c) Combined d) Sequential	(L1/CO1)	1
iv.	What is the main purpose of power flow control in hybrid drive trains? a) To maximize speed b) To minimize fuel consumption c) To increase battery life d) To simplify vehicle design	(L2/CO2)	1
v.	What is the primary advantage of hybrid traction systems? a) Improved vehicle aesthetics b) Increased fuel efficiency c) Reduced maintenance requirements d) Faster acceleration	(L2/CO2)	1
vi.	Electric drive trains primarily rely on which type of energy source? a) Fossil fuels b) Batteries c) Nuclear energy d) Flywheels	(L2/CO2)	1
vii.	Which drive system is known for its simple construction and high reliability? a) DC motor drive b) Induction motor drive c) Switch reluctance motor drive d) Permanent magnet motor drive	(L3/CO3)	1
viii.	Which of the following energy storage systems is most used in hybrid electric vehicles? a) Supercapacitors b) Flywheels c) Lithium-ion batteries d) Fuel cells		

9 Fuel cells primarily use which chemical reaction to produce energy? CO1

a) Combustion b) Electrolysis c) Oxidation-reduction d) Fusion

10 What is the key challenge in hybridizing different energy storage devices? CO1

a) Cost b) Compatibility c) Weight d) Power density

11 What is the purpose of matching the electric machine and the internal combustion engine (ICE)? CO1

a) To maximize efficiency b) To reduce vehicle weight c) To simplify the powertrain design d) To increase vehicle speed

12 Which factor influences the selection of power electronics for hybrid vehicles? CO1

a) Fuel efficiency b) Power rating c) Vehicle aesthetics d) Cost of materials

Q. 2 Solve the following.

A) Explain the history and evolution of hybrid and electric vehicles. Discuss their social and environmental importance. CO2

B) Compare and contrast conventional vehicles with hybrid electric vehicles in terms of energy efficiency, emissions, and performance. CO1

Q.3 Solve the following.

A) Explain the basic concept of hybrid traction and discuss the various hybrid drive-train topologies in detail. CO2

B) Describe the process of power flow control in hybrid drive-train topologies and analyze its impact on fuel efficiency. CO2

Q. 4 Solve Any Two of the following.

A) Explain the configuration and control of DC Motor drives, Induction Motor drives. CO1

B) Discuss the significance of power converters in electric vehicles and analyze their role in drive system efficiency. CO1

C) Explain how the drive system efficiency is achieved in hybrid and electric vehicles. Discuss the role of motor control techniques. CO1

Q.5 Solve Any Two of the following.

A) Explain the energy storage requirements in hybrid and electric vehicles. CO1

B) Discuss the working, advantages, and limitations of fuel cell-based energy storage systems in hybrid and electric vehicles. CO1

C) Explain the concept of hybridization of energy storage devices. Discuss its benefits and challenges in hybrid and electric vehicles. CO1

Q. 6 Solve Any Two of the following.

A) Explain the process of matching the electric machine and the internal combustion engine (ICE) in hybrid vehicles. Why is it important? CO1

B) Describe the role of in-vehicle networks such as CAN (Controller Area Network) in hybrid and electric vehicles. CO1

C) Discuss the energy management strategies used in hybrid and electric vehicles. CO1

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course: B. Tech. **Semester : VII**

Branch : Electrical Engineering/Electrical and Electronics Engineering/Electrical and Power/Electronics and Power

Subject Code & Name: BTEEE705B Energy Audit and Conservation

Max. Marks: 60 **Date: 21/02/2025** **Duration: 3 Hrs.**

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and will be objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

		(Level / CO)	Mark
Q.1	**Objective type questions. (Compulsory question)**		12
1	The Paris Agreement aims to limit global warming to below how many degrees Celsius? A) 1.5°C B) 2°C C) 0°C D) 3°C		1
2	Which international agreement requires countries to reduce greenhouse gas emissions to combat climate change? A) Kyoto Protocol B) Paris Agreement C) Montreal Protocol D) Rio Declaration		1
3	The energy that is released from a fuel when it burns is known as: A) Thermal energy B) Solar energy C) Chemical energy D) Mechanical energy		1
4	In energy-efficient design, which of the following elements is crucial for minimizing energy loss in industrial processes? A) Insulation B) Increased ventilation C) Larger motors D) Overuse of lighting		1
5	What is the role of energy audits in industrial processes? A) To assess energy efficiency and identify savings B) To reduce raw material usage C) To increase energy consumption D) To promote renewable energy adoption		1
6	How is energy consumption typically reduced in the municipal		1

sector?

A) Reduced use of electric transportation | B) Increased energy demand | C) Use of energy-efficient street lighting | D) Use of higher-emission fuels

7 Energy audit reports typically include: 1

A) Energy consumption data and recommendations for improvement | B) Raw data without analysis | C) Increased energy usage | D) Energy loss calculations without solutions

8 The results of an energy audit are typically used to: 1

A) Increase energy demand | B) Promote fossil fuel use | C) Ignore energy losses | D) Optimize energy usage and reduce costs

9 What is the primary goal of demand-side management in energy conservation? 1

A) Increase energy consumption | B) Reduce energy demand during peak times | C) Increase energy waste | D) Promote fossil fuel consumption

10 In energy conservation projects, what is typically monitored over time? 1

A) Project expenditures | B) Energy usage reduction | C) Emissions increase | D) Increased energy demand

11 The process of photosynthesis in plants is an example of: 1

A) Mechanical energy conversion | B) Nuclear energy conversion | C) Chemical energy storage | D) Electrical energy conversion

12 Which of the following can help reduce energy losses in industrial systems? 1

A) Increased fossil fuel use | B) Increased ventilation | C) Reduced machine size | D) Improved insulation

Q. 2 Solve the following. 12

A) Why is it necessary to conserve energy resources? Provide three reasons. L1 6

B) Discuss the United Nations Framework Convention on Climate Change and its significance. L2 6

Q.5 **Solve the following.**

A) How does the Paris Agreement contribute to reducing global greenhouse gas emissions? L2 6

B) Explain the various methods used in heating for industrial processes. L2 6

Q.6 **Solve Any Two of the following.** 12

A) What are the challenges of implementing energy conservation in the non-industrial sector? L3 6

B) Explain energy conservation opportunities in electric motor. What are advantages of energy efficient motors? L3 6

C) Explain clean development mechanism in details. L2 6

Q.7 **Solve Any Two of the following.** 12

A) What are the different types of energy audits and when should each be conducted? L4 6

B) What types of measuring devices are used in energy audits, and how do they contribute to accurate data? L3 6

C) How is data analysis conducted after an energy audit? Provide examples of common techniques. L4 6

Q.8 **Solve Any Two of the following.** 12

A) Why it is important to reduce the transmission and distribution losses? Discuss various method to reduce these losses. L2 6

B) Explain demand side management with advantages and disadvantages. L3 6

C) Write a short note on 1] Lux meter 2] Combustion Gas Analyser L3 6

*** End ***