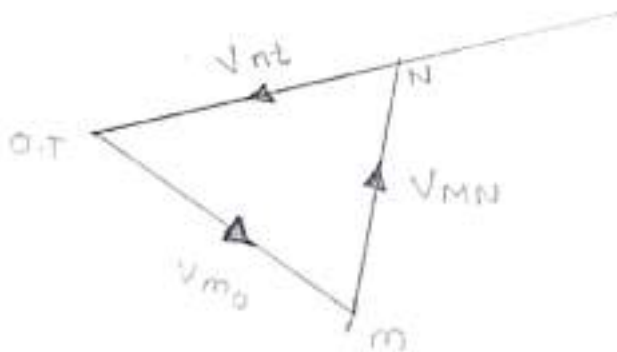


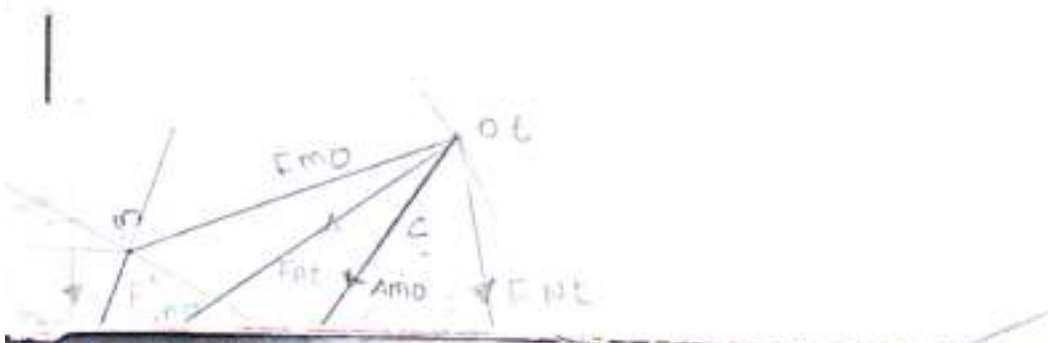
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QUESTION PAPER: (B. Tech/M. Tech/MBA)
 Class: TY Dept: Civil
 Exam date: August - 2022 / / 20 Paper Quantity: 7



ConFig Diagram



Velocity Diagram



DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Civil Engineering
Subject Code & Name: BTCVC603 Concrete technology

Semester : 6th Sem

Max Marks: 60

Date: 20/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. Solve any 5 out of Q.1 to Q.6.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/ Marks
CO)

Q.1 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Explain Dry and wet Process of Cement manufacturing with flow chart. | CO1 | 6 |
| B) Illustrate bulking of sand and explain in detail the laboratory method used to find out the bulking of sand. | CO1 | 6 |
| C) Enlist types of cement with its application. | CO1 | 6 |

Q.2 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Draw & explain with neat sketch of slump cone test used for measuring workability of concrete. | CO1 | 6 |
| B) Write a short note on curing of concrete. | | 6 |
| C) Define the following terms.
a) Segregation.
b) Bleeding.
c) Setting time of concrete. | CO1 | 6 |

Q.3 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Define Admixtures and State purpose of adding the admixtures into the concrete. (any four) | CO2 | 6 |
| B) Write a short note on Plasticizers and Super-plasticizers. | CO2 | 6 |
| C) Differentiate between the Retarder and Accelerator. (Min 4 points) | CO2 | 6 |

Q.4 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Write a short note on effect of W/C Ratio on Strength of concrete. | CO1 | 6 |
|---|-----|---|

- B) Explain the laboratory method of determining the compressive strength of concrete.
- C) Enlist the properties of fresh concrete and explain it in detail. (any four)

CO1 6
CO1 6

Q. 5 Solve Any Two of the following.

- A) Illustrate the terms creep and shrinkage of concrete and state its effect on structure.
- B) What is mean by alkali aggregate reaction (AAR) and explain the effects of alkali aggregate reaction.
- C) State Factors Contributing to Cracks in Concrete.

CO1 6
CO1 6
CO1 6

Q. 6 Solve Any Two of the following.

- A) Explain the mix design procedure of concrete as per IS code Method.
- B) Design a M35 concrete mix using IS method of Mix Design for the following data:

CO3 6
CO3 6

Maximum size of aggregate - 20mm (Angular)

Degree of workability - 0.90 compaction factor

Quality control - good

Cement- OPC 53 grade conforming

Type of exposure - severe

Specific Gravity A) Cement - 3.14 B) Sand - 2.63 C) Coarse aggregate - 2.68

Water absorption: A. Coarse aggregate - 0.5%

B. Fine aggregate - 1.0%

Free surface moisture: A. Coarse aggregate - Nil

B. Fine aggregate - 2.2%

Sand conforms to Zone I grading.

Assume any other data required suitably.

Note: Refer the following tables for design calculations.

- C) Write short note on non-destructive testing of concrete.

CO1 6

Table 1 Value of X
(Clause 4.2)

Sl No.	Grade of Concrete	Value of X
(i)	(ii)	(iii)
i)	M10 M15	3.0
ii)	M20 M25	5.5
iii)	M30 M35 M40 M45 M50 M55 M60	6.5
iv)	M65 and above	8.0

Table 2 Assumed Standard Deviation
(Clause 4.2.1.3)

Sl No.	Grade of Concrete	Assumed Standard Deviation (S)
(i)	(ii)	(iii)
i)	M10 M15	5.0
ii)	M20 M25	4.5
iii)	M30 M35 M40 M45 M50 M55 M60	3.8
iv)	M65 M70 M75 M80	6.0

Table 3 Approximate Air Content
(Clause 5.2)

Sl No.	Nominal Maximum Size of Aggregate mm	Entrapped Air, as Percentage of Volume of Concrete
(1)	(2)	(3)
i)	10	1.5
ii)	20	1.0
iii)	40	0.8

Table 4 Water Content per Cubic Metre of Concrete For Nominal Maximum Size of Aggregate
(Clause 5.3)

Sl No.	Nominal Maximum Size of Aggregate mm	Water Content ¹⁾ kg
(1)	(2)	(3)
i)	10	208
ii)	20	186
iii)	40	165

¹⁾Water content corresponding to saturated surface dry aggregate.

NOTES

- 1 These quantities of mixing water are for use in computing cement/cementitious materials content for trial batches.
- 2 On account of long distances over which concrete needs to be carried from batching plant/RMC plant, the concrete mix is generally designed for a higher slump initially than the slump required at the time of placing. The initial slump value shall depend on the distance of transport and loss of slump with time.

Table 5 Volume of Coarse Aggregate per Unit Volume of Total Aggregate for Different Zones of Fine Aggregate for Water-Cement/Water-Cementitious Materials Ratio of 0.50
(Clause 5.5)

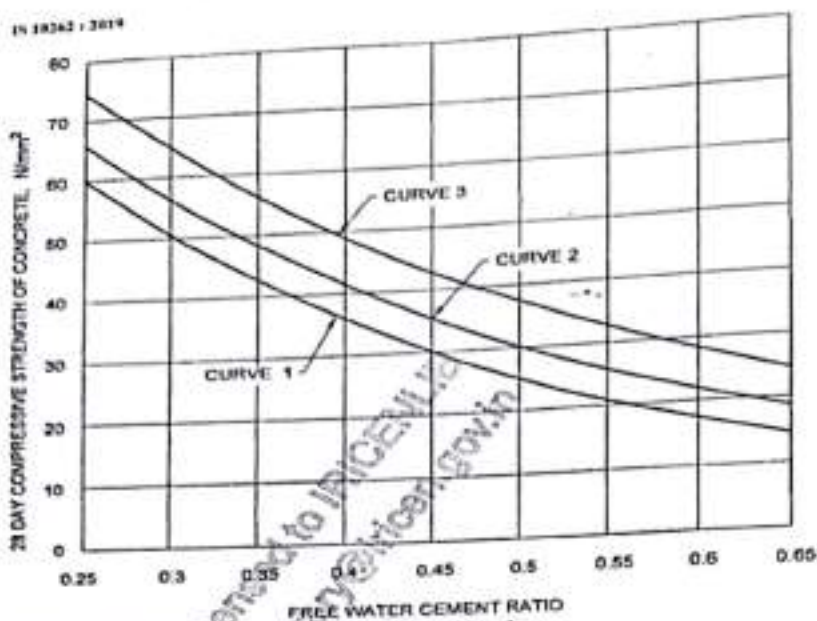
Sl No.	Nominal Maximum Size of Aggregate mm	Volume of Coarse Aggregate per Unit Volume of Total Aggregate for Different Zones of Fine Aggregate			
		Zone IV	Zone III	Zone II	Zone I
(1)	(2)	(3)	(4)	(5)	(6)
i)	10	0.54	0.52	0.50	0.48
ii)	20	0.66	0.64	0.62	0.60
iii)	40	0.73	0.72	0.71	0.69

NOTES

- 1 Volumes are based on aggregates in saturated surface dry condition.
- 2 These volumes are for crushed (angular) aggregate and suitable adjustments may be made for other shape of aggregate.
- 3 Suitable adjustments may also be made for fine aggregate from other than natural sources, normally, crushed sand or mixed sand may need lesser fine aggregate content. In that case, the coarse aggregate volume shall be suitably increased.
- 4 It is recommended that fine aggregate conforming to Grading Zone IV, as per IS 383 shall not be used in reinforced concrete unless tests have been made to ascertain the suitability of proposed mix proportions.



IN 18242 : 3814



Curve 1 - for expected 28 days compressive strength of 33 and 43 N/mm².
 Curve 2 - for expected 28 days compressive strength of 43 and 53 N/mm².
 Curve 3 - for expected 28 days compressive strength of 53 N/mm² and above.

*** End ***

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch : Civil Engineering

Semester : VI

Subject Code & Name: BTCVC602 (Foundation Engineering)

Max Marks: 60

Date: 17/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

Q.1 Solve Any Two of the following.

- | | | |
|---|------------|---|
| A) What is sample, sampler and sampling. What is inside clearance and outside clearance? Why it is required for the sampler? | Remember | 6 |
| B) Enlist different soil exploration methods and explain any one in detail. | Understand | 6 |
| C) Explain seismic refraction method of soil exploration with neat sketch. A sampling tube has inner diameter of 70 mm and cutting edge of 68 mm. its outside diameters are 72 mm and 74 mm respectively. Determine area ratio, inside clearance, outside clearance of the sampler. | Evaluate | 6 |

Q.2 Solve Any Two of the following.

- | | | |
|---|----------|---|
| A) Explain Terzaghi's Bearing capacity theory in detail with neat sketch. | Apply | 6 |
| B) A strip footing, 1.5 m wide, rests on the surface of a dry cohesionless soil having $\phi = 20^\circ$ and $\gamma = 19 \text{ kN/m}^3$. If the water table rises temporarily to the surface due to flooding, calculate the percent reduction in ultimate bearing capacity of the soil. Assume $N_q = 5.0$ | Evaluate | 6 |
| C) Explain the Plate load test in details with neat sketch. | Apply | 6 |

Q.3 Solve Any Two of the following.

- | | | |
|--|------------|---|
| A) Explain the mechanical and chemical stabilization methods in brief. | Apply | 6 |
| B) Define Mat/raft footing and explain under what circumstances, a Mat/Raft footing is adopted? | Understand | 6 |
| C) Design of combined footing for two adjacent column using following details:
Load on each column – 800kN
Size of each column – 500mm X 500mm
c/c spacing of column – 3.0m
SBC of soil – 100kN/m ² . Justify footing type you use. | Evaluate | 6 |

Q.4 Solve Any Two of the following.

A) Define and explain load carrying capacity of group piles.

B) A concrete pile is 20 m length and 360 mm x 360 mm in cross section. The pile is fully embedded in sand which unit weight is 16.8 kN/m³ and $\phi = 30^\circ$. You are given also $N_{q*} = 56.7$. Calculate:

a) The ultimate load (Q_p), by using Meyerhof's method.

b) Determine the frictional resistance (Q_s), if $k = 1.3$ and $\delta = 0.8\phi$.

c) Estimate the allowable load carrying capacity of the pile (Use FS = 4).

C) Explain the IS code method for designing Raft foundation.

Remember

6

Evaluate

6

Understand

6

Q.5 Solve Any Two of the following.

A) Explain the Swedish Circle method of Analysis of slopes.

B) Define a) slope failure b) face failure c) toe failure d) base failure.

C) Analyse infinite slope, having following details:

Soil – silt, Slope angle – 25° ($r = 18 \text{ kN/m}^3$, $r_{\text{sat}} = 21 \text{ kN/m}^3$, $c = 20 \text{ kN/m}^2$, $\phi = 30^\circ$), Height of slope – 7m

Water table – 2m below ground level, Seepage is parallel to slope.

*** End ***

Understand

6

Remember

6

Evaluate

6

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD - 402 103
Summer Semester Examination –June - 2022

Branch: Civil Engineering

Subject with Subject Code:- Design of Concrete Structures I (BTCVC601)

Date:- 11/08/2022

Sem:- VI

Marks: 60

Time:- 3 Hr. 45 Min

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly
5. Use IS: 456-2000 is allowed

- Q.1. Solve the following (Marks)**
- a) Enlist different assumption for design of member in working stress Method. (04)
 - b) Find maximum compressive stress in concrete and tensile stress in steel in a doubly reinforced section for the following data. Width of beam=300 mm, Effective depth of beam=500 mm, Effective Cover= 25 mm Moment= 120 KNm. Area of steel in tension= 4 bars of 20 mm diameter. Area of steel in compression= 4 bars of 20 mm diameter. Modular Ratio (m)=13.33. Using Working Stress Method (WSM). (08)
- Q.2. Solve the following**
- a) What's are different load acting on R C structures? (04)
 - b) Design one way simply supported slab for the following data. (08)
Effective Span =4 m
Live Load= 3 KN/m²
Floor Finish= 1 KN/m²
Use M_{20} and Fe 250. Using Working Stress Method (WSM).
- Q.3. Solve the following**
- a) A circular column having diameter 500 mm is reinforced with 8 bars of 16 mm diameter. The column is 8 m long and is effectively held in position at both ends but not restrained against rotation. Find load carrying capacity of column. Use M_{20} & Fe 415. Using Working Stress Method (WSM). (04)
 - b) Design an isolated footing of uniform thickness of a R.C. column (08) carrying a load of 1650 KN and having size 450 mm X 450 mm. The safe bearing capacity of soil may be takes as 250 KN/m². Use

M₂₅ and Fe 415.

Using Working Stress Method (WSM).

Q.4. Solve the following

- a) Explain limit state method (04)
- b) Design under reinforced section to resist factored BM of 125 KNm having width 250 mm using M₂₀ and Fe 250 using Limit state Method (LSM). (08)

Q.5. Solve the following

- a) Draw and explain stress strain diagram for singly reinforced rectangular section (04)

Design intermediate beam (T- Beam) for the slab beam system given below (Figure 1) by IS Code method (Limit State Method) using M₁₅ and Fe 415. (08)

Udl on slab = 5 KN/m²

Floor Finish = 1 KN/m²

Slab Thickness = 100 mm

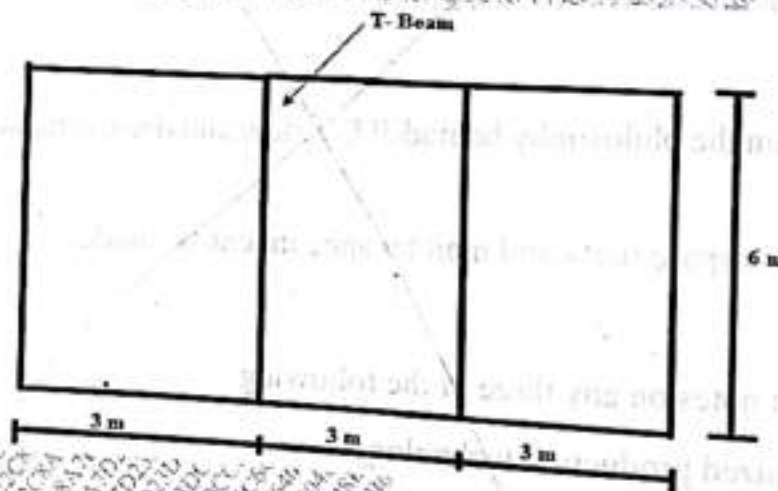


Figure 1

Q.6. Solve the following

- a) Explain different type of Shear Reinforcement in beam (04)
- b) A simply supported beam is 250 mm X 500 mm overall having 2 bars of 20 mm diameter going into the support if the working shear force at the support is 135 KN as working load. Find the anchorage length, the clear cover is 25 mm. Use M₂₀ and Fe 415. Using Limit state Method (LSM). (08)

*****End*****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

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

Subject Code & Name: BTCVE605D Advanced Engineering Geology

Max Marks: 60

Date: 29/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) Write short notes on:- a. Principle of Uniformitarianism b. Law of cross cutting c. AA lava flows	(CO1)	6
B) Give a detailed account of the geological time scale.	(CO1)	6
C) Describe the physiographic divisions of India and their geological characters.	(CO1)	6
Q.2 Solve Any Two of the following.		
A) Write a short note on:- a. Undisturbed sampling b. Aquitards c. Boundary mapping	(CO2)	6
B) Describe aquifer and their types with a neat labeled diagram.	(CO2)	6
C) What are the various drilling techniques used for rock exploration?	(CO2)	6
Q.3 Solve Any Two of the following.		
A) Write a short note on:- a. Exfoliation weathering b. Columnar joints c. Laterite	(CO4)	6
B) State and explain various types of basalts with their engineering properties.	(CO2)	6
C) Explain the construction criteria's of percolation tanks.	(CO3)	6
Q.4 Solve Any Two of the following.		
A) Write a short note on:- a. Koyana earthquake b. Convergent plate boundary	(CO2)	6

- c. Crushing strength of rocks
- B) What are the major factors that are responsible for landslide events? (CO4) 6
- C) Enumerate the difference between Wenner and Schlumberger resistivity methods. (CO2) 6

Q. 5 Solve Any Two of the following.

A) Write a short note on:-

- Richter scale
- Residual soil profile
- Black cotton soil properties

B) Write a detailed note on textural classification soil. (CO1) 6

C) Explain in detail about seismic zones in India with neat labeled diagram. (CO4) 6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch : Civil Engineering

Semester: VI

Subject Code & Name: BTCVC606 Building Planning & Design

Max Marks: 60

Date: 26/08/2022

Duration: 5 Hrs.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) Explain various planning principles that relates to building services.	(CO1)	6
B) Explain the green building concept.	(CO1)	6
C) Draw plan of a residential building as per sun/wind diagram.	(CO1)	6
Q.2 Solve Any Two of the following.		
A) Explain the standard dimensions of building components as per NBC.	(CO1)	6
B) Describe the process of obtaining building permission.	(CO1)	6
C) Draw a building plan as per the NBC guidelines.	(CO1)	6
Q.3 Solve Any Two of the following.		
A) Describe the traditional methods of building construction.	(CO2)	6
B) Discuss various low cost housing materials.	(CO2)	6
C) Draw single-line drainage plan of a residential building.	(CO2)	6
Q.4 Solve Any Two of the following.		
A) Draw single-line electrification plan of a residential building.	(CO2)	6
B) Discuss various component parts of plumbing system.	(CO2)	6
C) Explain fire resistance system in detail.	(CO2)	6
Q.5 Solve Any Two of the following.		
A) Draw single-line furniture plan of a residential building.	(CO3)	6
B) Discuss the functional requirements of ventilation.	(CO3)	6
C) Explain Sabine's formula and discuss various materials to be used for better acoustics in a building.	(CO3)	6

***** End *****

(Signature)

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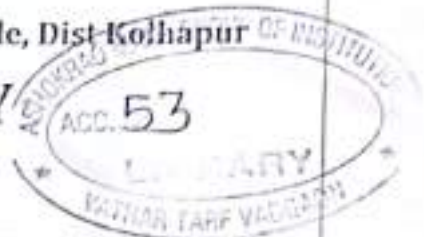
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DBATU

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

Class: TY Dept: Computer
 Exam date: August - 2022 Paper Quantity: 4



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$$\frac{h}{x} = \tan \theta$$

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Computer Science and Engineering Semester : VI

Subject Code & Name: Computer Networks (BTCOC602)

Max Marks: 60

Date: 17/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(BT Level)	Marks
Q.1 Solve Any Two of the following.		12
A) Explain network software with respect to protocol hierarchy and design issue for layer?	Understand	6
B) Compare connection oriented and connectionless protocol?	Understand	6
C) Define following performance metrics. Bandwidth, Latency, data rate, Delay-bandwidth product and throughput	Remember	6
Q.2 Solve Any Two of the following.		12
A) Compare token ring and FDDI with their frame format.	Application	6
B) With reference of ATM answer the following a. How is an ATM virtual connection identified? b. Name the ATM layers and their functions. c. Why does ATM use small, fixed-length cells?	Understand	6
C) Explain in brief 802.11 architecture and protocol stack?	Understand	6
Q.3 Solve Any Two of the following.		12
A) Illustrate the services provided to the network layer by the data link layer.	Understand	6
B) Calculate CRC code for Message "11101010111101010100011" if divisor polynomial is $X^5 + X^2 + X + 1$	Apply	6
C) In a block of addresses, we know the IP addresses of two hosts are 25.34.12.56/16, 182.44.82.16/26. What are the first address (network address) and the last address (limited broadcast address) in each of these blocks?	Apply	6
Q.4 Solve Any Two of the following.		12
A) The following is a dump of a TCP header in hexadecimal format. (05320017 00000001 00000000 500207FF 00000000) ₁₆ a. What is the source port number and the destination port number?	Apply	6

- c. What the sequence number?
 - d. What is the acknowledgment number?
 - e. What is the length of the header?
 - f. What is the type of the segment?
 - g. What is the window size?
- B) Compare IPv4/IPv6 protocols? Understand 6
- C) Illustrate with example leaky bucket and token bucket algorithms for traffic shaping? Understand 6

Q.5 Solve Any Two of the following.

- A) Explain types of DNS messages? Understand 6
- B) Compare SMTP and POP Protocols. Understand 6
- C) Illustrate with example public key and private key cryptography? Understand 6

*** End ***

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) Define Compiler? State some commonly used compiler-construction tools.	Remembering	6
B) Explain how the assignment statement $position = initial + rate * 60$ is grouped into the lexemes and mapped into the tokens passed on the syntax analyzer.	Understanding, Applying	6
C) What are the contents of a symbol table? Explain in detail the symbol table organization for Block-Structured languages.	Remembering, Analyzing	6
Q.2 Solve Any Two of the following.		
A) Explain the concept of the transition diagram with an example transition diagram of <i>relop</i> . Write important conventions about the transition diagram.	Remembering, Applying	6
B) In lexical analysis, explain for example how tokens, patterns, and lexemes are related.	Remembering, Analyzing	6
C) Explain the structure of the lexical-analyzer generator. Show the construction of an NFA from a Lex program.	Understanding, Applying	6
Q.3 Solve Any Two of the following.		
A) How Left Recursion is eliminated? Explain with algorithm and example.	Remembering, Analyze	6
B) What is meant by shift-reduce parsing? Explain the configuration of a shift-reduce parser on input $id1 * id2$.	Remembering, Applying	6
C) Construct a Predictive parsing table for the Grammar $E \rightarrow E + T \mid T, T \rightarrow T * F \mid F, F \rightarrow (E) \mid id$.	Applying	6
Q.4 Solve Any Two of the following.		
A) Differentiate between Synthesized and Inherited attributes with suitable examples. Also, define what is meant by annotated parse tree.	Analyze	6
B) Explain constructing syntax trees for simple expressions involving only binary operators + and -. State the use of Leaf and Node in this syntax tree.	Understanding, Applying	6
C) Explain in brief about Type checking and Type Conversion.	Remembering, Analyze	6
Q.5 Solve Any Two of the following.		
A) What is the purpose of code optimization? Explain the DAG representation of basic blocks with examples.	Remembering, Understand	6
B) Explain the Code generation algorithm with three-address instructions. State the four principal uses of registers.	Understanding, Applying	6
C) What is a Flow Graph? Explain how a given program can be converted into a Flow graph?	Understanding, Analyze	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: TY.

Branch : Computer Engg/CSE

Semester : VI

Subject Code : BTCOE605(C)

Subject Name: Consumer Behavior

Max Marks: 60

Date:26/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. Assume suitable data wherever necessary and mention it clearly.

		(Level/CO)	Marks
Q.1 Solve Any Two of the following.			
A) Explain nature and scope of consumer behavior.	Understand	6	
B) What are the Approaches to consumer behaviour research?	Knowledge	6	
C) Illustrate and explain various buying rolls through following example. Eg: You and Friend went to a Cloth shops for his/her shopping. Suddenly your mother phoned you and asked you to buy a shirt for your father.	Application/ Evaluation	6	
Q.2 Solve Any Two of the following.			
A) On what criteria would you evaluate the viability of the segment?	Knowledge	6	
B) What are the various levels at which segmentation can take place?	Knowledge	6	
C) Write short note on i. Bases of segmenting consumer markets. ii. Positioning strategies	Understand	6	
Q.3 Solve Any Two of the following.			
A) Compare the levels of consumer decision making w.r.t EPS And LPS.	Analysis	6	
B) Explain stages in consumer decision making process with example.	Understand	6	
C) What is cognitive dissonance? How can a marketer help reduce cognitive dissonance?	Analysis	6	
Q.4 Solve Any Two of the following.			
A) Explain versatility of Maslow's Hierarchy of Needs Theory with an example	Understand	6	
B) List out models of Consumer Behavior. Explain economic model in brief.	Synthesis	6	
C) Note the differences between Organizational and Consumer Buying.	Analysis	6	
Q.5 Solve Any Two of the following.			
A) Write short notes on : i. Social class mobility ii. Lifestyle analysis	Knowledge	6	
B) What is adoption process? Explain its Stages.	Knowledge	6	
C) Explain types of promotion. What is Promotion Mix?	Understand	6	

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch :CE/CSE

Semester :VI

Subject Code & Name: BTCOE603(C) Object Oriented Analysis Design

Date: 20/08/2022

Duration: 3.45 Hr.

Max Marks: 60

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/ CO)	Marks
Q.1 Solve Any Two of the following.		
A) Describe Encapsulation and Information hiding.	L1, L2, L3	6
B) Define static and Dynamic Binding for objects	L1, L2	6
C) Explain Object Oriented SDLC with suitable diagram	L2, L4, L5	6
Q.2 Solve Any Two of the following.		
A) Draw Class diagram for Hospital management system	L1, L2, L3	6
B) Draw & explain UML - Basic Notations	L2, L4, L5	6
C) Draw Use Case Diagram for Library management system	L2, L4, L5, L6	6
Q.3 Solve Any Two of the following.		
A) Explain in brief Use case analysis with the example	L2, L4, L5, L6	6
B) Explain CRC card analysis with example	L2, L3, L5, L6	6
C) What is Object Oriented Analysis (OOA) & Explain in brief following	L2, L4, L5, L6	6
I. Functionalities of OOA		
II. Advantages of OOA		
Q.4 Solve Any Two of the following.		
A) What is system design? Explain Object-Oriented Decomposition in detail	L1, L2	6
B) What is Behavioral Design Patterns? Explain following types	L1, L2, L3	6
I. Chain of Responsibility Pattern		
II. Command Pattern		
C) What is Creational Design Pattern? Explain following types	L1, L2, L3	6
I. Factory Pattern		
II. Abstract Factory Pattern		
Q.5 Solve Any Two of the following.		
A) What are the benefits of Object Oriented Databases (OOD)	L1, L2	6
B) Differentiate between Object-Oriented languages & Non-Object-Oriented languages	L5	6
C) What is Future of Object-Oriented Technology	L5	6

*** End ***

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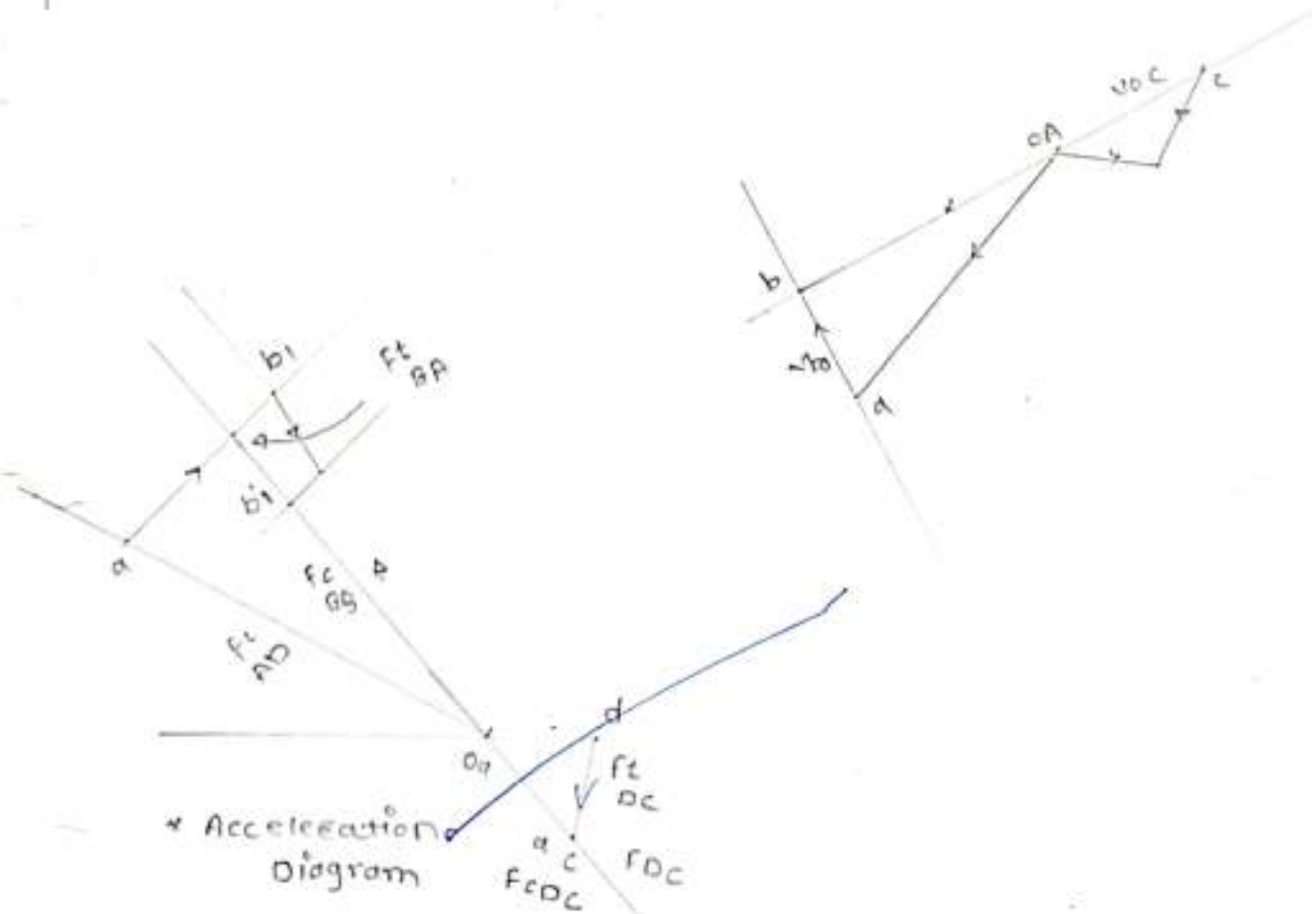
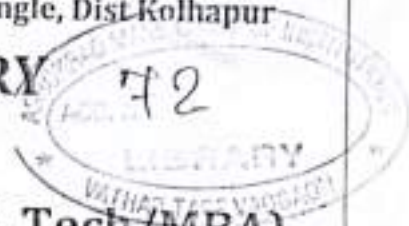
QUESTION PAPER: (B. Tech/M. Tech/MBA)

Class: TY

Dept: Electrical

Exam date: August - 2022

7/20 Paper Quantity: 5



DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch : Electrical

Semester :Sixth

Subject Code & Name: BTEEOE606B (Project Management)

Max Marks: 60

Date: 20/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any Two of the following.

- | | | |
|--|---------------|---|
| A) Define Project and Classify Project in detail | (Understand) | 6 |
| B) Enlist and explain stages of project management? | (Remember) | 6 |
| C) Enlist and explain characteristics of Project Management? | (Remember) | 6 |

Q.2 Solve Any Two of the following.

- | | | |
|---|---------------|---|
| A) Explain Time Estimation Method? | (Understand) | 6 |
| B) Explain The Time Estimation Formula? | (Remember) | 6 |
| C) What is Project Cost Estimation? | (Understand) | 6 |

Q.3 Solve Any Two of the following.

- | | | |
|--|---------------|---|
| A) Enlist and explain Purpose of the work-breakdown structure? | (Remember) | 6 |
| B) Enlist and explain types of work breakdown structures? | (Understand) | 6 |
| C) Enlist and explain any one project scheduling technique? | (Remember) | 6 |

Q.4 Solve Any Two of the following.

- | | | |
|---|---------------|---|
| A) What is a Baseline in Project Management (Project Baseline)?
Explain benefits of having a project baseline? | (Understand) | 6 |
| B) What is my scheduling objective? | (Remember) | 6 |
| C) Enlist and explain Scheduling objectives? | (Remember) | 6 |

Q.5 Solve Any Two of the following.

- | | | |
|--|---------------|---|
| A) Explain in brief project monitoring and control? | (Understand) | 6 |
| B) Explain the steps in designing a Monitoring system? | (Remember) | 6 |
| C) Explain Main Applications of a Project Management Information System? | (Remember) | 6 |

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: T.Y.B. Tech.

Branch :Electrical Engg and Allied Branches Semester :VI

Subject Code & Name: (BTEEC602) Principles of Electrical Machine Design

Max Marks: 60

Date: 17/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any Two of the following.

- | | | |
|---|------------|---|
| A) What are the brief study of Magnetic, Electric, Dielectric material? | Remember | 6 |
| B) Explain in brief the various limitations in design of electrical machines. | Understand | 6 |
| C) What is the importance and purpose of specification in design and manufacturing of electrical machines? State the standard specification of transformer. | Remember | 6 |

Q.2 Solve Any Two of the following.

- | | | |
|--|------------|---|
| A) Explain detail design of heating coils? | Understand | 6 |
| B) Grade the resistance of a 5 section starter for a 7.5 kW, 260 V, 750 r.p.m. d.c. shunt motor from the following data:
Maximum torque during starting period = 1.5 times full load torque ; full load efficiency =86.5 per cent. Armature circuit copper loss is 50 per cent of total loss. Field current = 2.6 A. Find the speed at each stud when the notching takes place. | Analyze | 6 |
| C) Explain design of choke coil? | Understand | 6 |

Q.3 Solve Any Two of the following.

- | | | |
|---|------------|---|
| A) Draw the winding diagram in developed form for a simplex lap wound 24slot, pole d.c. armature with 24 commutator segments. Also draw the sequence diagram to show the position of brushes. | Analyze | 6 |
| B) What is the concentric winding and what are the types? | Understand | 6 |
| C) What is the role of equalizer connections? Why do we dispose equalizer connection in case of simplex wave windings? | Understand | 6 |

Q.4 Solve Any Two of the following.

- | | | |
|---|------------|---|
| A) What are the different modes of heat dissipation in electric machines? | Understand | 6 |
|---|------------|---|

- What is thermal resistance? What is its unit?
- B) Derive the equation of temperature rise with time in electric machine. Remember 6
- What is heating time constant?
- C) Explain and compare the distribution and power transformers? Understand 6

Q. 5 Solve Any Two of the following.

- A) A 250 kVA, 6600/400 V, 3 phase core type transformer has a total loss of 4800 W at full load. The transformer tanks is 1.25 m in height and 1 m x 0.5 m in plan. Design a Suitable scheme for tubes if the average temperature rise is to be limited to 35° C. The diameter of tubes is 50 mm and are spaced 75 mm from each other. The average height of tubes is 1.05 m. Specific heat dissipation due to radiation and convection is respectively 6 and 6.5 W/m² -°C. Assume that convection is improved by 35 per cent due to provision of tubes. Analyze 6
- B) A 100 kV A, 2000/400 V, 50 H, single phase shell type transformer has sandwich coils. There are two full h.v. coils, one full l.v. coil and two half l.v. coils. Calculate the value of leakage reactance referred to h.v. side. Also calculate p.u. leakage reactance. The data given is: depth of h.v. coil = 40 mm, depth of l.v. coil = 36 mm, depth of duct between h.v. and l.v. = 16 mm, width of winding = 0.12 m, length of mean turn = 1.5 m. The number of turns in h.v. winding are 200. Analyze 6
- C) Give the advantages of aided computer designing of transformer? Understand 6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch: Electrical Engineering

Semester: VI

Subject Code & Name: Control System (RTEEC601)

Max Marks: 60

Date: 11/08/2022

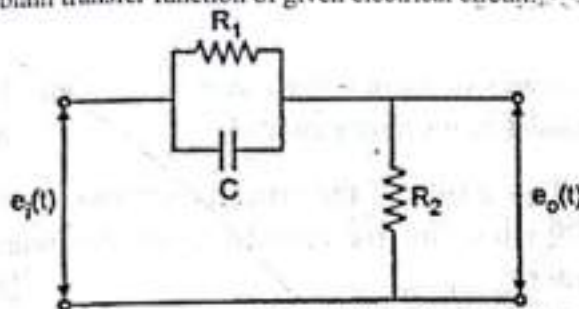
Duration: 3.45 Hrs.

Instructions to the Students:

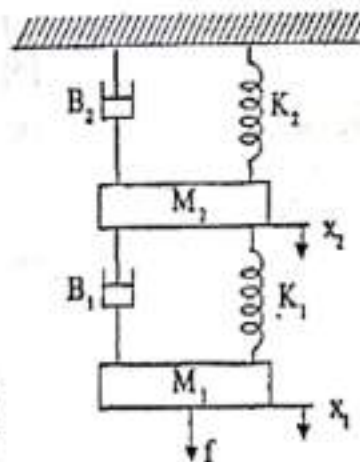
1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

Q.1 Solve Any Two of the following.

- A) Explain sensitivity? what is effects of feedback on sensitivity.
- B) Obtain transfer function of given electrical circuit.



- C) Write the equation describing the motion of the mechanical system also find the transfer function.



Q.2 Solve Any Two of the following.

- A) Explain signal flow graph in detail with the help of Masons gain formula.
- B) Determine transfer function of given system using block diagram reduction technique.

(Level/CO) Mark

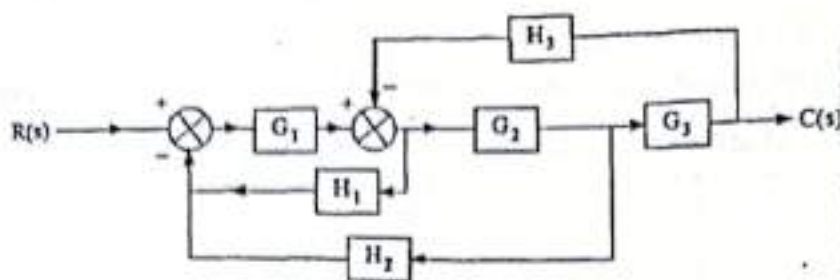
Understanding 06

Understanding 06

Applying 06

Understanding 06

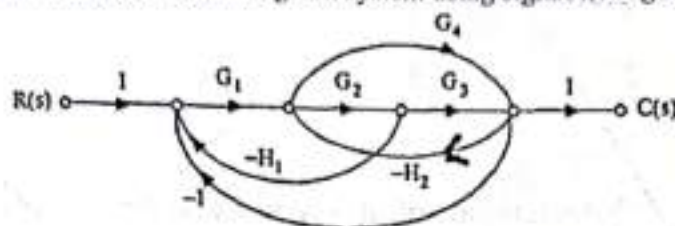
Understanding 06



C) Determine transfer function of given system using signal flow graph.

Understanding

06



Q.3 Solve Any Two of the following.

- Derive expression for delay time, rise time, peak time and settling time.
- Find the steady state error for unit step, unit ramp and unit acceleration inputs for the following systems.

Understanding

06

Applying

06

$$G(S) = \frac{10}{S(0.1S+1)(0.5S+1)}$$

- Determine stability of the system with the following characteristic equation.

Applying

06

$$D(S) = S^6 + S^5 + 7S^4 + 6S^3 + 31S^2 + 25S + 25$$

Q.4 Solve Any Two of the following.

- Write a short note on PI Controller and PID Controller.
- A Unity feedback system has an open loop transfer function

Understanding

06

Understanding

06

$$G(S) = \frac{K(S+4)}{S^2+2S+2}$$

Sketch root locus of given system.

- A Unity feedback system has an open loop transfer function

Understanding

06

$$G(S) = \frac{10}{S(1+0.4S)(1+0.1S)}$$

Determine GM, PM and comment on system stability using bode plot.

Q.5 Solve Any Two of the following.

- Derive the expression for the transfer function from the state model

Understanding

06

$$\dot{X} = AX + BU \quad Y = CX + DU$$

- Find the state space model for the system having transfer function

Understanding

06

$$\frac{Y(S)}{U(S)} = \frac{1}{(S^2 + S + 1)}$$

- Verify the controllability and observability given system represented by

Applying

06

$$\dot{x} = \begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -1 & -1 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} [u]$$

$$Y = \begin{bmatrix} 0 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

*** End ***

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) Explain V-I characteristics of Power Diode.	CO-2	6
B) Give the Advantages, disadvantages and application of IGBT.	CO-3	6
C) Explain V-I characteristics of SCR.	CO-2	6
Q.2 Solve Any Two of the following.		
A) Give comparison between R triggering, RC triggering, UJT triggering.	CO-2	6
B) Explain Commutation.	CO-2	6
C) Explain Thyristor Firing Circuit.	CO-3	6
Q.3 Solve Any Two of the following.		
A) Explain effect of source inductance on the performance of 3 phase Full bridge diode rectifier.	CO-2	6
B) Explain 1 phase Half wave rectifier with R-L Load and freewheeling diode.	CO-2	6
C) Explain 1 ϕ Half wave diode Rectifier with R Load.	CO-2	6
Q.4 Solve Any Two of the following.		
A) Explain single phase Full wave AC voltage controller with RL Load.	CO-2	6
B) Explain single phase half wave AC Voltage controller with R-Load.	CO-2	6
C) Compare ON-OFF Control and Phase angle control.	CO-3	6
Q.5 Solve Any Two of the following.		
A) Explain principle of Step-down chopper (Back) operation.	CO-2	6
B) Explain performance parameters of Inverter.	CO-2	6
C) Explain half bridge inverter with R-load.	CO-2	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Electrical Engineering

Semester : VI

Subject Code & Name: BTEEC605A & SWITCH GEAR AND PROTECTION

Max Marks: 60

Date: 29/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/C
O) Marks

Q.1 Solve Any Two of the following.

- | | | |
|--|-----|---|
| A) Explain Principle of working and characteristics of attracted armature type relay | CO1 | 6 |
| B) What are Different types of Distance Relays explain impedance relay in detail. | CO2 | 6 |
| C) Explain Microprocessor based overcurrent relay with diagram and flow chart. | CO2 | 6 |

Q.2 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Explain construction and working principle of Minimum oil Circuit Breaker | CO1 | 6 |
| B) For 132KV system, the reactance and capacitance up to the location of C.B is 3 ohm and 0.015 microfarad respectively calculates following: a) Frequency of Transient Oscillation. b) The maxi Value of restriking Voltage Across the contacts of C.B c) The maxi value of RRRV | CO3 | 6 |
| C) What are characteristics of SF6 gas and explain Puffer type SF6 Circuit breaker | CO2 | 6 |

Q.3 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Explain Numerical protection working principle, types and advantages and disadvantages of numerical relay. | CO1 | 6 |
| B) What are different method of Earthing explain its advantages explain one in detail. | CO2 | 6 |
| C) Explain construction working surge absorber its application. | CO2 | 6 |

Q.4 Solve Any Two of the following.

- | | | |
|---|-----|---|
| A) Explain the circulating current protection of Busbar also explain linear couplers. | CO1 | 6 |
|---|-----|---|

- B) Explain high impedance differential protection of Busbar.
- C) Explain the parallel feeder protection and ring main protection.

CO2 6
CO2 6

Q. 5 Solve Any Two of the following.

- A) Explain Alternators Stator fault protection system.
- B) Explain Unbalanced load protection for alternator.(Negative phase sequence [NPS] protection)
- C) Explain Buchholz relay with neat diagram explain its advantages & Disadvantages, application.

CO1 6
CO2 6
CO2 6

*** End ***

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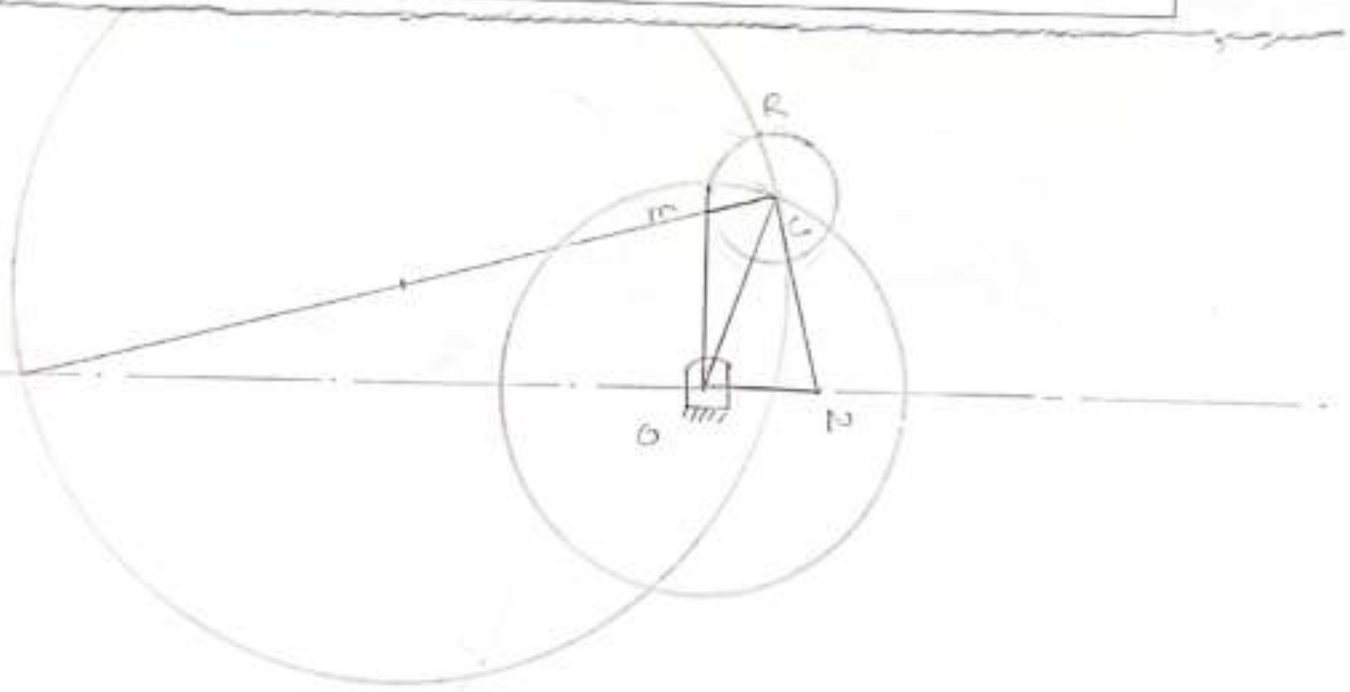
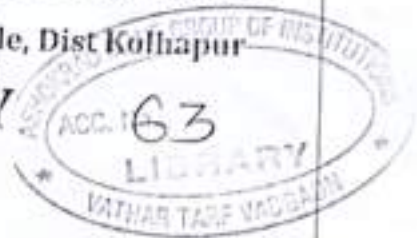
QUESTION PAPER: (B. Tech/M. Tech/MBA)

Class: TY

Dept: Electronics

Exam date: 7 August
20

Paper Quantity: 6



DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Electronics and Telecommunication Semester :VI

Subject Code & Name: BTETC601 Antennas and Wave Propagation

Max Marks: 60

Date: 11/08/2022

Duration: 3.45 Hrs.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any one of the following.

- A) Prove that total complex power fed into a volume is equal to the algebraic sum of the active power dissipated as heat, plus the reactive power proportional to the difference between time-average magnetic and electric energies stored in the volume, plus the complex power transmitted across the surface enclosed by the volume. 12

- B) Prove that Skin Depth $\delta = \frac{1}{\alpha} = \frac{1}{\beta}$ 12

Q.2 Discuss in details Any Two points of the following

- A) Radiation Intensity 6
- B) Effective Area 6
- C) Field of an Antenna 6

Q.3 Design and explore Any one of the following.

- A) Design and array of eight elements spaced at $\lambda/2$ distance. 12
- B) Explain the concept of pattern multiplication in detail 12

Q.4 Illustrate Any one array of the following.

- A) Explain the Dolph - Chebychev method of array synthesis 12
- B) Obtain the Tschebyschev Polynomial corresponding to $m = 7, 8, 9$ 12

Q.5 Design Any two antenna of the following.

- A) Rhombic Antenna 6
- B) Yagi Uda Antenna 6
- C) Log Periodic Antenna 6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch :EXTC

Semester :VI

Subject Code & Name: BTHM606 Employability & Skill Development

Max Marks: 60

Date: 29/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculator is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any Two of the following.

- | | | |
|---|----------|---|
| A) Explain the components of Emotional Intelligence? | CO1, CO2 | 6 |
| B) Give the types of nonverbal Communication? | CO1, CO2 | 6 |
| C) Write an Acceptance Letter to a company which had sent you the Selection Letter for the interview that you had attended last Wednesday | CO1, CO2 | 6 |

Q.2 Solve Any Two of the following.

- | | | |
|--|------|---|
| A) Define Mental Arithmetic Skills by Hall (1954) and Explain mental arithmetic? | CO 4 | 6 |
| B) Explain the different type of Multiple Intelligences? | CO 4 | 6 |
| C) Explain the different type of higher-order thinking skills? | CO 4 | 6 |

Q.3 Solve Any Two of the following.

- | | | |
|---|------|---|
| A) Explain different types of aptitude | CO 4 | 6 |
| B) Give main four human ability. Write the Antonym for Dismantle, rapture, terminate and arduous? | CO 4 | 6 |
| C) What is the process of preparation for analytical reasoning? | CO 4 | 6 |

Q.4 Solve Any Two of the following.

- | | | |
|--|-----|---|
| A) Write a descriptive paragraph on international yoga day within 150 to 200 words | CO2 | 6 |
| B) What is Brain Storming? | CO2 | 6 |
| C) Paraphrase the following paragraph | CO2 | 6 |

It is sometimes thoughts that it is a beneficial for companies to sponsor sports events through advertising. By doing this, extra funding, which is often lacking, can be raised to support sports events and ensure that they continue to run. Furthermore, companies can also contribute clothing or equipment which supports the event, teams and players.

Q. 5 Solve Any Two of the following.

- A) Explain in detail different types of interviews.
- B) Mention tips that would assist the candidate during an interview?
- C) Difference between group discussion vs Panel discussion vs Debate?

CO3

CO3

CO3

6

6

6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Electronics & Telecommunication Engineering

Subject Code & Name: BTETPE604C Power Electronics Semester : VI

Max Marks: 60

Date: 26/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q. 1 Solve Any Two of the following.		
A) What are power devices? Explain with V-I characteristics of SCR.	Level 05	6
B) With the help of circuit diagram and wave forms explain working of single phase half wave converter with resistive load.	Level 05	6
C) Draw vertical section and V-I characteristics of IGBT.	Level 03	6
Q.2 Solve Any Two of the following.		
A) With the help of circuit diagram and wave forms explain working of single phase half controlled bridge rectifier with resistive R load.	Level 05	6
B) Explain with circuit diagram operation of set-up chopper.	Level 05	6
C) A single phase full controlled converter is fed from 230V, 50 Hz supply. The load is highly inductive find the average load voltage and current if the load resistance is 10 ohm and firing angle is 45° .	Level 04	6
Q. 3 Solve Any Two of the following.		
A) What are control strategies? Explain how to control the output voltage of chopper.	Level 06	6
B) Explain the operation of Type A or Type C chopper with circuit diagram and waveforms.	Level 05	6
C) Explain the operation of single phase bridge inverter.	Level 05	6
Q.4 Solve Any Two of the following.		
A) What are the different pulse width modulation techniques used for inverters. Explain any one.	Level 05	6
B) Explain the operation of SMPS.	Level 03	6
C) What is the need of UPS? Explain the UPS system and its component.	Level 05	6

Q. 5 Solve Any Two of the following.

A) With the help of circuit diagram and wave forms explain working of single phase half controlled bridge rectifier with RL load.

Level 03

6

B) A single phase semi converter is operated from 230V, 50 Hz AC supply. The load is resistive having resistance of 10 ohm and firing angle is 60° calculate.

Level 04

6

(i) Average output voltage.

(ii) RMS output voltage.

C) Explain the operation of Type C chopper

Level 05

6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : EXTC

Semester : VI

Subject Code & Name: BTETC602 COMPUTER NETWORK & CLOUD COMPUTING

Max Marks: 60 Date: 17/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All Questions are Compulsory
2. Draw neat diagram wherever necessary.
3. Figures to right indicates full marks
4. Assume suitable data wherever necessary and mention it clearly

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) Explain the OSI reference model with neat diagram	1	06
B) I) Compare the Go-Back-N ARQ and Selective Repeat ARQ	2	03
II) Compare the HDLC and PPP.		03
C) Explain the following networking devices in short.	5	06
I. HUB		
II. Router		
III. Bridge		
Q.2 Solve Any Two of the following.		
A) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows:	7	06
i. The first group has 64 customers; each needs 256 addresses.		
ii. The second group has 128 customers; each needs 128 addresses.		
iii. The third group has 128 customers; each needs 64 addresses.		
Design the sub-blocks and find out how many addresses are still available after these allocations.		
B) I) A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/28.	7	04
i. What is the first address in the block?		
ii. Find the last address for the block		
iii. Find the number of addresses		02
II) Change the following IPv4 addresses from dotted-decimal notation to binary notation.		
i. 111.56.45.78		
ii. 221.34.7.82		
C) I. Describe in brief the types of classfull addressing	3	03
II. Compare the TCP and UDP		03
Q.3 Solve Any Two of the following.		
A) The UDP header in hexadecimal format is as : CB8400D001C001C	7	06
Obtain the following from it:		
i. Source port number		
ii. Destination port number		
iii. Total length		
iv. Length of the data.		
v. Name of client process	2	02
B) I) Compare the networking devices Router and Switch		04
II) Explain the different types of addressing used in computer network.		

- C) Write Short Note on following(Any 2):
 I) WWW
 II) EMAIL
 III) Ethernet Frame Format

8 06

Q.4 Solve Any Two of the following.

- A) Find the sub network address and the host-ID for the following
 I. IP Address – 120.14.22.16 & Mask- 255.255.128.0
 II. IP Address – 140.11.36.22 & Mask- 255.255.255.0
 III. IP Address – 141.181.14.16 & Mask- 255.255.224.0

7 06

- B) Explain any two protocols for noisy channel in DATA LINK LAYER

2 06

- C) Define the following terms -

6

- i) Repeater
 ii) Ethernet
 iii) Bluetooth
 iv) Virtual LAN
 v) Jitter
 vi) Routing

1
1
1
1
1
1

Q.5 Solve Any Two of the following.

- A) Explain IPV4 Addressing and IPV6 Addressing. Also write difference between Classful and Classless Addressing

4 06

- B) What is network topology? Explain the different network topologies.

1 06

- C) I. Define Framing? And Explain in brief about different framing methods.
 II. Define Computer Network?

2 04

02

*** End ***

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q.1 Solve Any Two of the following.

- A) State and explain any six applications of python. Level 6 6
- B) State which of the following python statements are valid and invalid. Level 3 6
- a. `x = input("enter your name")`
 - b. `x = input()`
 - c. `x = input("")`
 - d. `x = input(' ')`
 - e. `x = input(2)`
 - f. `x = input("Python" + 53)`
- C) What are identity operators, explain with suitable examples. Level 6 6

Q.2 Solve Any Two of the following.

- A) Differentiate between List, Tuple & Set with suitable examples of each. Level 6 6
- B) Explain any six assignment operators of python with suitable examples of each. Level 3 6
- C) If a four-digit number is input through the keyboard, write a program (using for loop) to display sum of all digits. Level 4 6

Q.3 Solve Any Two of the following.

- A) If the ages of Raj, Ketan and Kunal are input through the keyboard, write a program to determine the Level 6 6
- a) Youngest of the three.
 - b) Oldest of three
- B) Explain count() methods of list. Write a python program which will take name and subject as input from students (from class of 75 students) and at the end it should display names of all students and total number of students who opted for subject Python Programming. Level 4,5 6
- C) Explain for loop with suitable example? Level 3,4 6

Q.4 Solve Any Two of the following.

- A) Explain concept of OOP in Python with suitable example. Also Explain concept of inheritance in detail. **Level 5,6** **6**

- B) Write a python program to print following pattern (using loop statement) **Level 3** **6**

```
*****
 * * *
 * *
 *
```

- C) If any integer is input through the keyboard. Write a python program to find out whether it is a prime number or non-prime number. **Level 4** **6**

Q.5 Solve Any Two of the following.

- A) What is turtle in Python? Write a program to draw following pattern using same. **Level 4,5** **6**



- B) A program has to be written in python which will take two numbers as input from user and perform the division in such a way that program should not terminate (because of ZeroDivisionError) even if user input is zero. **Level 4,5** **6**

- C) If any two numbers are the input by user, write a program to design a simple arithmetic calculator (addition, subtraction, multiplication and division) with the help of OOP concepts. **Level 4** **6**

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch : Electronics & Telecommunication Engineering

Subject Code & Name: BTETPE604C Power Electronics

Semester : VI

Max Marks: 60

Date: 26/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) What are power devices? Explain with V-I characteristics of SCR.	Level 05	6
B) With the help of circuit diagram and wave forms explain working of single phase half wave converter with resistive load.	Level 05	6
C) Draw vertical section and V-I characteristics of IGBT.	Level 03	6
Q.2 Solve Any Two of the following.		
A) With the help of circuit diagram and wave forms explain working of single phase half controlled bridge rectifier with resistive R load.	Level 05	6
B) Explain with circuit diagram operation of set-up chopper.	Level 05	6
C) A single phase full controlled converter is fed from 230V, 50 Hz supply. The load is highly inductive find the average load voltage and current if the load resistance is 10 ohm and firing angle is 45° .	Level 04	6
Q.3 Solve Any Two of the following.		
A) What are control strategies? Explain how to control the output voltage of chopper.	Level 06	6
B) Explain the operation of Type A or Type C chopper with circuit diagram and waveforms.	Level 05	6
C) Explain the operation of single phase bridge inverter.	Level 05	6
Q.4 Solve Any Two of the following.		
A) What are the different pulse width modulation techniques used for inverters. Explain any one.	Level 05	6
B) Explain the operation of SMPS.	Level 03	6
C) What is the need of UPS? Explain the UPS system and its component.	Level 05	6

Q. 5 Solve Any Two of the following.

A) With the help of circuit diagram and wave forms explain working of single phase half controlled bridge rectifier with RL load.

Level 03

6

B) A single phase semi converter is operated from 230V, 50 Hz AC supply.

Level 04

6

The load is resistive having resistance of 10 ohm and firing angle is 60° calculate.

(i) Average output voltage.

(ii) RMS output voltage.

C) Explain the operation of Type C chopper

Level 05

6

***** End *****

Shri Balasaheb Mane Shikshan Prasarak Mandal, Ambap's
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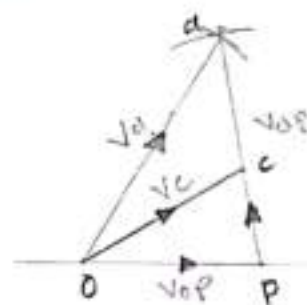
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QUESTION PAPER: (B. Tech/M. Tech/MBA)

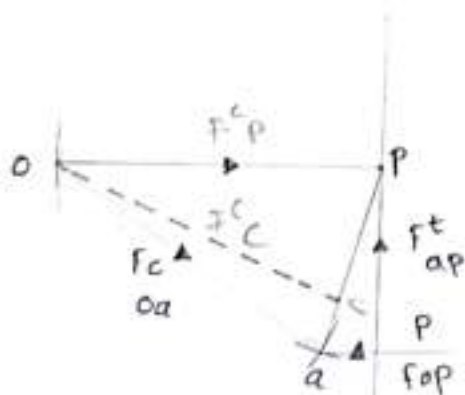
Class:.....TY.....

Dept:.....Mechanical.....

Exam date: August-2022
7/20 Paper Quantity:.....5.....



* Velocity Diagram



* Acceleration Diagram

TY. Mech

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End-Semester Examination – Summer 2022

Course: T.Y. B.Tech. Branch: Mechanical Engineering Semester: VI
Subject Code & Name: BTMEC603 / Applied Thermodynamics-II
Max Marks: 60 Date: 20-08-2022 Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO), on which the question is based, is mentioned in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

Level/CO Marks

Q.1 Solve Any Two of the following:

- | | | |
|---|---------|---|
| A) Classify different types of I.C. Engines | BL4/CO1 | 6 |
| B) Draw and explain Diesel Cycle with the help of P-V & T-S diagrams. | BL4/CO1 | 6 |
| C) Derive an expression for efficiency of Otto cycle. | BL6/CO1 | 6 |

$$\eta_{\text{otto}} = 1 - \frac{1}{r^{(\gamma-1)}}$$

Where, r is compression ratio and γ is adiabatic index

Q.2 Solve Any Two of the following:

- | | | |
|---|---------|---|
| A) Draw circuit diagram of a coil/battery ignition system. Write functions of its important components. | BL2/CO2 | 6 |
| B) Write as short note on 'emission regulation norms' | BL3/CO2 | 6 |
| C) A 4-cylinder, 4-Stroke, petrol-engine works on indicated mean effective pressure (MEP) of 6 bar and engine speed of 1250 rpm. Find the swept volume and indicated power developed by engine if piston diameter is 100 mm & stroke length is 150 mm. Also calculate the brake power available at crank shaft if mechanical efficiency is 75%. | BL3/CO2 | 6 |

Q.3 Solve Any Two of the following:

- | | | |
|--|---------|---|
| A) Classify different types of refrigerants. | BL4/CO3 | 6 |
| B) Draw and explain ideal vapour-compression refrigeration cycle on T-s and P-h diagrams. | BL3/CO3 | 6 |
| C) An NH_3 refrigeration plant has a capacity of 20 TR. The condensation and evaporation temperatures are 35°C and -20°C respectively. Refrigerant is dry and saturated at the entry to the compressor. There is no sub-cooling of the liquid refrigerant. If the actual COP is 0.7 times the theoretical COP, Calculate mass flow-rate of the refrigerant. | BL3/CO3 | 6 |

(Use P-h chart of NH_3 which is given at the end of question paper)
COP: Coefficient of Performance



Q.4 Solve Any Two of the following:

A) Elaborate the terms SHF and BPF.

BL2/CO4

6

B) With reference to air-conditioning, define following terms:

BL1/CO4

6

- i) Dry Bulb Temperature
- ii) Dew Point Temperature
- iii) Relative Humidity

C) Differentiate between horizontal axis wind-turbine and vertical axis wind-turbine.

BL5/CO5

6

Q.5 Solve Any Two of the following:

A) Draw schematic diagram of a simple steam power plant. Also, draw corresponding Rankine cycle on T-s diagram and explain it.

BL4/CO5

6

B) Describe Diesel power plant with the help of schematic diagram.

BL2/CO6

6

C) What factors should be taken into consideration while selecting a site for steam power plant?

BL2/CO6

6

*** End ***

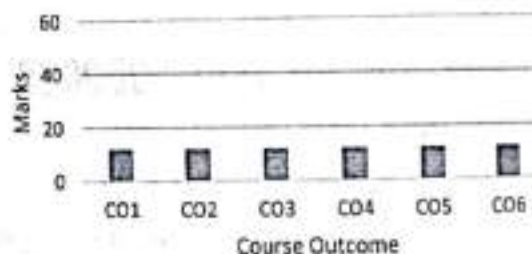
BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Synthesizing, 6 - Evaluating)
CO – Course Outcomes

Bloom's Level wise Marks Distribution



- Level 2
- Level 3
- Level 4
- Level 5
- Level 6

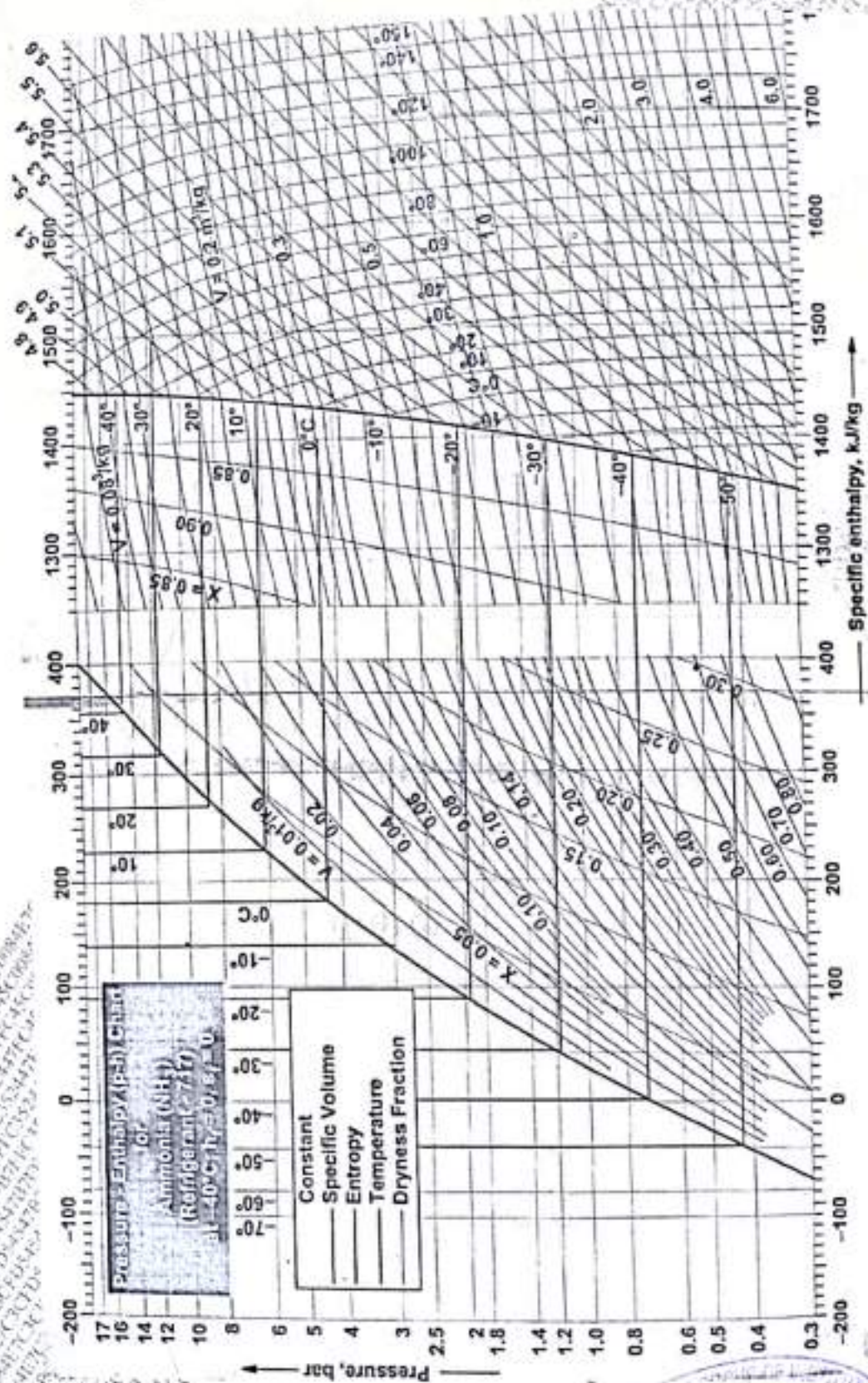
Course Outcome wise Marks Distribution



PRN :

Q. No _____ Sign of Supervisor _____

Note: Attach this P-h chart to your answer sheet



DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Mechanical Engineering Semester : 6th

Subject Code & Name: BTME602, Machine Design - II

Max Marks: 60

Date: 17/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) The following data is given for a hydrostatic thrust bearing: thrust load = 500 kN, shaft speed = 720 rpm, shaft diameter = 500 mm, recess diameter = 300 mm, film thickness = 0.15 mm, viscosity of lubricant = 160 SUS, specific gravity = 0.86, Calculate (i) supply pressure; (ii) flow requirement in litres/min; (iii) power loss in pumping; and (iv) frictional power loss.	Level 3 - Apply CO1 CO2	6
B) A single-row deep groove ball bearing is subjected to a radial force of 8 kN and a thrust force of 3 kN. The values of X and Y factors are 0.56 and 1.5 respectively. The shaft rotates at 1200 rpm. The diameter of the shaft is 75 mm and Bearing No. 6315 (C = 112 000 N) is selected for this application. (i) Estimate the life of this bearing, with 90% reliability. (ii) Estimate the reliability for 20 000 h life	Level 3 - Apply CO1 CO2	6
C) Derive following fundamental equation for viscous flow through rectangular slot. $Q = \frac{\Delta p b h^3}{32 \mu l}$	Level 3 - Apply CO1 CO2	6
Q.2 Solve Any Two of the following.		
A) It is required to design a pair of spur gears with 20° full-depth involute teeth consisting of a 20-teeth pinion meshing with a 50 teeth gear. The pinion shaft is connected to a 22.5 kW, 1450 rpm electric motor. The starting torque of the motor can be taken as 150% of the rated torque. The material for the pinion is plain carbon steel Fe 410 (Sut = 410 N/mm ²), while the gear is made of grey cast iron FG 200 (Sut = 200 N/mm ²). The factor of safety is 1.5. Design the gears based on Lewis form factor and using velocity factor to account for the dynamic load 1. Identify the weaker element out of pinion and gear 2. Calculate the module based on beam strength 3. Calculate tangential force on gear tooth 4. Calculate beam strength and factor of safety to check if design is safe. Refer Table for values of Lewis form factor.	Level 3 Apply CO4 CO5	6
B) A pair of parallel helical gears consists of a 20 teeth pinion meshing with a 40 teeth gear. The helix angle is 25° and the normal pressure angle is 20°. The normal module is 3 mm. Calculate (i) the transverse module; (ii) the transverse pressure angle; (iii) the axial pitch; (iv) the pitch circle diameters of the pinion and the gear; (v) the center distance; and (vi) the addendum and dedendum circle diameters of the pinion.	Level 3 Apply CO4 CO5	6
C) Explain following terminologies of gear nomenclature with mathematical equation (wherever necessary) 1. Transmission ratio	Level 3 Apply CO4	6

2. Velocity ratio
3. Pressure angle
4. Circular Pitch
5. Diametral Pitch
6. Module

Q.3 Solve Any Two of the following.

- A) A pair of bevel gears, with 20° pressure angle, consists of a 20 teeth pinion meshing with a 30 teeth gear. The module is 4 mm, while the face width is 20 mm. The material for the pinion and gear is steel 50C4 ($S_{ut} = 750 \text{ N/mm}^2$). The gear teeth are lapped and ground (Class-3) and the surface hardness is 400 BHN. The pinion rotates at 500 rpm and receives 2.5 kW power from the electric motor. The starting torque of the motor is 150% of the rated torque. Tangential force acting on gear tooth is 1193.66 N. Determine the factor of safety against pitting failure only. Assume that Buckingham's equation is used to account for dynamic load.

Data:

1. The error 'e' for Class-3 gear teeth with 4 mm module is 0.0125 mm.
2. $C = 11400 \text{ N/mm}^2$

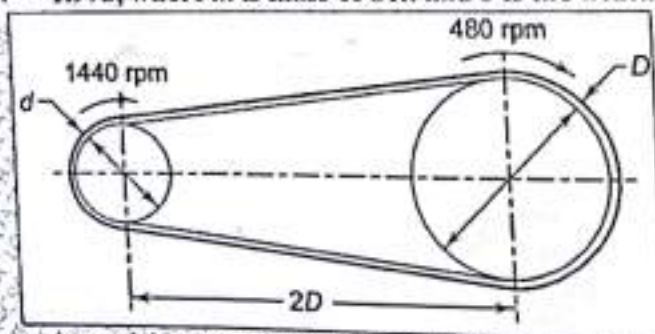
- B) A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20° . Determine the components of the gear tooth force acting on the worm and the worm wheel.
- C) Explain advantages and disadvantages of worm gears as compared to other gears.

Q.4 Solve Any Two of the following.

- A) The layout of a leather belt drive transmitting 15 kW of power is shown in Fig. The centre distance between the pulleys is twice the diameter of the bigger pulley. The belt should operate at a velocity of 20 m/s approximately and the stresses in the belt should not exceed 2.25 N/mm^2 . The density of leather is 0.95 g/cc and the coefficient of friction is 0.35. The thickness of the belt is 5 mm. Calculate:

- (i) the diameter of pulleys,
- (ii) the length and width of the belt, and
- (iii) the belt tensions.

Consider $mv^2 = 1.97b$, where m is mass of belt and b is the width of belt



- B) A chain drive is used in a special purpose vehicle. The vehicle is run by a 30kW rotary engine. There is a separate mechanical drive from the engine shaft to the intermediate shaft. The driving sprocket is fixed to this intermediate shaft. The efficiency of the drive between the engine and the intermediate shafts is 90%. The driving sprocket has 17 teeth and it rotates at 300 rpm. The driven sprocket rotates at 100 rpm. Assume moderate shock conditions and select a suitable four-strand chain for this drive.

COS

Level 3

Apply

CO4

COS

Level 3

Apply

CO4

COS

Level 2

Understand

CO4

COS

Level 3

Apply

CO4

COS

Level 3

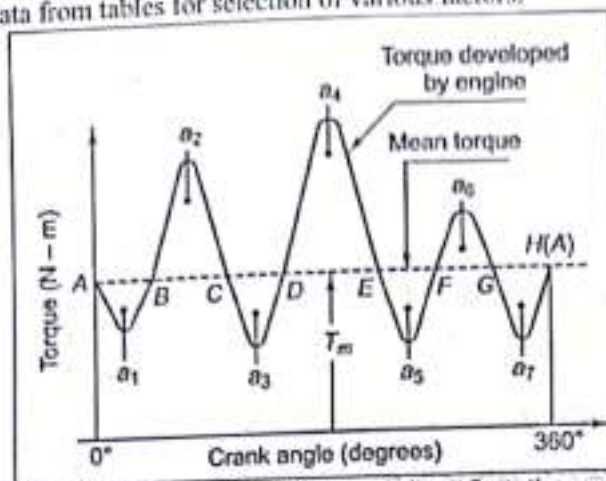
Apply

CO4

COS

Use Given data from tables for selection of various factors.

C)



Level 3
Apply

6

Demonstrate the concept & mathematical equation of maximum fluctuation of energy and coefficient of fluctuation of energy by using this diagram.

Q. 5 Solve Any Two of the following.

- A) An automotive plate clutch consists of two pairs of contacting surfaces with an asbestos friction lining. The torque transmitting capacity of the clutch is 550 N-m. The coefficient of friction is 0.25 and the permissible intensity of pressure is 0.5 N/mm². Due to space limitations, the outer diameter of the friction disk is fixed as 250 mm. Using uniform wear theory, calculate
- the inner diameter of the friction disk; and
 - the spring force required to keep the clutch in an engaged position.

Level 3
Apply
CO3

6

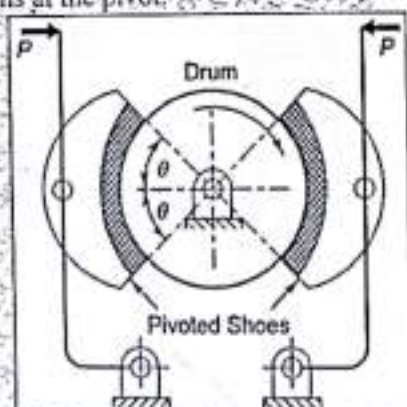
- B) A pivoted double-block brake, has two shoes, which subtend an angle (2θ) of 100°. The diameter of the brake drum is 500 mm and the width of the friction lining is 100 mm. The coefficient of friction is 0.2 and the maximum intensity of pressure between the lining and the brake drum is 0.5 N/mm². The pivot of each shoe is located in such a manner that the moment of the frictional force on the shoe is zero.

Calculate:

- the distance of the pivot from the axis of the brake drum;
- the torque capacity of each shoe; and
- the reactions at the pivot.

Level 3
Apply
CO3

6



- C) What is the meaning of autofrettage in cylinders? Explain three methods of prestressing the cylinders.

Level 2
Understand
CO6

6

*** End ***



Table – Values of Lewis Form Factor Y for 20° Full Depth Involute System

<i>z</i>	<i>Y</i>	<i>z</i>	<i>Y</i>	<i>z</i>	<i>Y</i>
15	0.289	27	0.348	55	0.415
16	0.295	28	0.352	60	0.421
17	0.302	29	0.355	65	0.425
18	0.308	30	0.358	70	0.429
19	0.314	32	0.364	75	0.433
20	0.320	33	0.367	80	0.436
21	0.326	35	0.373	90	0.442
22	0.330	37	0.380	100	0.446
23	0.333	39	0.386	150	0.458
24	0.337	40	0.389	200	0.463
25	0.340	45	0.399	300	0.471
26	0.344	50	0.408	Rack	0.484

Table – Dimensions and Static and Dynamic Load Capacities of Single Row Deep Groove Ball Bearing

<i>Principal dimensions (mm)</i>			<i>Basic load ratings (N)</i>		<i>Designation</i>
<i>d</i>	<i>D</i>	<i>B</i>	<i>C</i>	<i>C₀</i>	
70	90	10	12100	9150	61814
	110	13	28100	19000	16014
	110	20	37700	24500	6014
	125	24	61800	37500	6214
	150	35	104000	63000	6314
	180	42	143000	104000	6414
75	95	10	12500	9800	61815
	115	13	28600	20000	10615
	115	20	39700	26000	6015
	130	25	66300	40500	6215
	160	37	112000	72000	6315
	190	45	153000	114000	6415

Design Data for Roller Chains

Table 14.2 Power rating of simple roller chain

Pinion speed (rpm)	Power (kW)								
	06 B	08 A	08 B	10 A	10 B	12 A	12 B	16 A	16 B
50	0.14	0.28	0.34	0.53	0.64	0.94	1.07	2.06	2.59
100	0.25	0.53	0.64	0.98	1.18	1.74	2.01	4.03	4.83
200	0.47	0.98	1.18	1.83	2.19	3.40	3.75	7.34	8.94
300	0.61	1.34	1.70	2.68	3.15	4.56	5.43	11.63	13.06
500	1.09	2.24	2.72	4.34	5.01	7.69	8.53	16.99	20.57
700	1.48	2.95	3.66	5.91	6.71	10.73	11.63	23.26	27.73
1000	2.03	3.94	5.09	8.05	8.97	14.32	15.65	28.63	34.89
1400	2.73	5.28	6.81	11.18	11.67	14.32	18.15	18.49	38.47
1800	3.44	6.98	8.10	8.05	13.03	10.44	19.85	—	—
2000	3.80	6.26	8.67	7.16	13.49	8.50	20.57	—	—

Table 14.3 Service factor (K_s)

Type of driven load	Type of input power		
	IC engine with hydraulic drive	Electric motor	IC engine with mechanical drive
(i) Smooth: agitator, fan, light conveyor	1.0	1.0	1.2
(ii) Moderate shock: machine tools, crane, heavy conveyor, food mixer, grinder	1.2	1.3	1.4
(iii) Heavy shock: punch press, hammer mill, reciprocating conveyor, rolling mill drive	1.4	1.4	1.7

Table 14.4 Multiple strand factor (K_1)

Number of strands	K_1
1	1.0
2	1.7
3	2.5
4	3.3
5	3.9
6	4.6

Table 14.5 Tooth correction factor (K_2)

Number of teeth on the driving sprocket	K_2
15	0.85
16	0.92
17	1.00
18	1.05
19	1.11
20	1.18
21	1.26
22	1.29
23	1.35
24	1.41
25	1.46
30	1.73

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch: Mechanical

Semester: Sixth

Subject Code & Name: BTME605A Quantitative Techniques In Project Management

Max Marks: 60

Date: 26/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

CO Marks

Q.1 Solve Any Two of the following (A & B OR C)

- A) The Gutchi Company manufactures purses, shaying bags, and backpacks. The construction includes leather and synthetics. The production process requires two types of skilled labor: sewing and finishing. The following table gives the availability of the resources, their usage by the three products, and the profits per unit.

Resource	Resource requirement per unit			Daily availability
	Purse	Bag	Backpack	
Leather (ft ²)	2	1	3	42 ft ²
Sewing (hr)	2	1	2	40 hr
Finishing (hr)	1	0.5	1	45 hr
Profit	24	22	45	

1. Formulate the LPP in standard form
2. Write the LPP in augmented form
3. Construct the initial simplex tableau by highlighting the column and row corresponding to entering and leaving basic variables respectively.

- B) Define the following with respect to a linear programming problem.

1. Feasible solution
2. Optimal solution
3. Corner point feasible solution

OR

- C) Write any three limitations of operations research.

Q.2 Solve Any Two of the following (A & B OR C)

- A) Find the optimal solution to the following transportation problem in which the cells contain the unit transportation cost in rupees.

Source/Destination	D ₁	D ₂	D ₃	D ₄	D ₅	Supply
S ₁	7	6	4	5	9	40
S ₂	8	5	6	7	8	30
S ₃	6	8	9	6	5	20
S ₄	5	7	7	8	6	10
Demand	30	30	15	20	5	

[Note: Initial solution must be found using Vogel's approximation method]

- B) Solve the following assignment problem using Hungarian algorithm

		Task			
		1	2	3	4
Assignee	A	4	1	0	1
	B	1	3	4	0
	C	3	2	1	3
	D	2	2	3	0

OR

- C) SunRay Transport Company ships truckloads of grain from three silos to four mills. The supply (in truckloads) and the demand (also in truckloads) together with the unit transportation costs per truckload on the different routes are summarized in table below:

		Mill				Supply
		1	2	3	4	
Silo	1	10	2	20	11	15
	2	12	7	9	20	25
	3	4	14	16	18	10
Demand		5	15	15	15	

Find the initial solution using

1. Northwest corner method
2. Least-cost method

- Q.3 Solve Any Two of the following.

- A) The maintenance cost and resale value per year of a machine whose purchase price is Rs. 7000 are given below:

Year	1	2	3	4	5	6	7	8
Maintenance Cost (Rs.)	900	1200	1600	2100	2800	3700	4700	5900
Resale value (Rs.)	4000	2000	1200	600	500	400	400	400

When should the machine be replaced?

- B) A machine costs Rs. 500/-. Operation and maintenance costs are zero for the first year and increase by Rs. 100/- every year. If money is worth 5% every year, determine the best age at which the machine should be replaced. The resale value of the machine is negligibly small.

- C) In a self-service departmental store, a cashier serves the customers at the cash counter. 9 customers arrive in every 5 minutes. Cashier can serve 10 customers in every 5 minutes. Assuming Poisson arrival rate and exponential distribution for service rate, calculate:

1. Average number of customers in the system.
2. Average number of customers in the queue.
3. Average time customer spends in the system.

Q.4 Solve Any Two of the following.

- A) State any 3 assumptions & 3 limitations of basic EOQ model 5 6
- B) The demand for a product is 600 units per week, and the items are consumed at a constant rate. The ordering cost to replenish inventory is Rs. 25. Inventory holding cost is Rs. 0.05 per item per week. 5 6
1. Assuming shortages are not allowed, determine how often to order and what size the order should be.
 2. If shortages are allowed but cost Rs. 2 per item per week, determine how often to order and what size the order should be.
- C) Derive an expression for the economic order quantity (EOQ) " Q^* " for the basic EOQ model. [Neglect shortages & price breaks] 5 6

Note: All the terms/notation used must be clearly specified/introduced at the beginning of the derivation or before first use.

Q.5 Solve Any Two of the following.

- A) Widgetco is about to introduce a new product (product 3) which is an assembly of product 1 & 2. A list of activities and their predecessors and of the duration of each activity is given in the table below. 6 6

Activity	Predecessors	Duration (days)
A = train workers		6
B = purchase raw mat.		9
C = produce product 1	A, B	8
D = produce product 2	A, B	7
E = test product 1	D	10
F = assemble 1 & 2	C, E	12

1. Construct project network (Using activity on an approach)
 2. Identify the critical path using CPM.
 3. Calculate float (free) for each activity.
- B) Electronic Toys Company, is about to begin a project to design an advertising campaign for a new line of toys. Time estimates are as below. 6 6

Activity	Optimistic	Most Likely	Pessimistic	Predecessor
A	12 days	12 days	12 days	-
B	15 days	21 days	39 days	-
C	12 days	15 days	18 days	A
D	18 days	27 days	36 days	B
E	12 days	18 days	24 days	C
F	2 days	5 days	14 days	E

Use the mean critical path to find the probability that the advertising campaign will be ready to launch within 57 days. 6 6

Shortly explain the following

1. Resource smoothing
2. Variable resource levelling
3. Fixed resource levelling
4. Combined resource levelling

The End

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Branch : Mechanical Engineering/ Mechanical Engineering (Sandwich)

Course: B. Tech.

Semester : VI

Subject Code & Name: BTMEC 601- Manufacturing Processes - II

Max Marks: 60

Date: 11/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Solve Any Two of the following.		
A) Define abrasive with the help of a single grain having a negative rake angle.	CO1	6
B) What are the advantages of coextrusion?	CO6	6
C) Derive mathematical expression to determine the shear angle in orthogonal cutting.	CO2	6
Q.2 Solve Any Two of the following.		
A) Describe with the help of a suitable sketch mechanism of chip formation in orthogonal machining of ductile materials.	CO2	6
B) Explain the standard marking system for the given conventional grinding wheel (30 A 46 H 6 V XX).	CO1	6
C) Define tool life and discuss the concept of crater wear and flank wear.	CO3	6
Q.3 Solve Any Two of the following.		
A) What are the major properties required of cutting tool materials?	CO3	6
B) In a machining operation that approximates orthogonal cutting, the cutting tool has a rake angle = 10° . The chip thickness before the cut $t_o = 0.50$ mm and the chip thickness after the cut $t_c = 1.125$ mm. Calculate the shear plane angle and the shear strain in the operation.	CO2	6
C) Describe the advantages and limitations of powder metallurgy parts.	CO4	6
Q.4 Solve Any Two of the following.		
A) Discuss with a suitable sketch the concept of heat generation and temperature distribution in metal cutting.	CO3	6
B) How is glass tubing produced?	CO5	6
C) Briefly describe the plastic extrusion process.	CO6	6
Q.5 Solve Any Two of the following.		
A) Discuss powder production using water atomization technique with sketch.	CO4	6
B) How flat sheets/ glass are manufacture? Explain float glass method.	CO5	6
C) What is an abrasive? Discuss conventional abrasives in brief.	CO1	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. Branch : Mechanical Engineering Semester : VI
 Subject Code & Name: BTMC401 Manufacturing Processes I
 Max Marks: 60 Date: 13/08/2022 Duration: 3.45 Hr

Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q.1 Answer Any Two of the following.		
A) Explain the following types of casting processes	CO1	6
I) Expendable-pattern casting (Lost Foam)		
II) Shell-mold casting		
B) What is the function of chills in the casting processes? Why the chaplets are used in casting?	CO1	6
C) What is 'Fluidity Index'? Name the property of the mold that provides "ability to give way and allow casting to shrink without cracking the casting". Define the casting defect 'Misrun'.	CO1	6
Q.2 Explain any two of the following with neat diagrams.		
A) Two-high or three-high rolling mills.	CO2	6
B) Cluster mill.	CO2	6
C) Impression-die forging.	CO2	6
Q.3 Answer Any Two of the following.		
A) Explain the Process of Impact Extrusion giving suitable example.	CO3	6
B) Explain types of shearing dies.	CO3	6
C) Show the following types of discontinuities in fusion welds.	CO4	6
i) Underfill		
ii) Inclusions		
iii) Overlap		
iv) Undercut		
v) Incomplete penetration		
Q.4 Answer Any Two of the following.		
A) Explain the following types of welding processes	CO4	6
I) Thermit Welding		
II) Friction Stir Welding	CO5	6
B) What are different types of lathes?	CO5	6
C) What is gun drilling and how drill life is measured?		
Q.5 Write short notes on Any Two of the following.		
A) Broaching.	CO6	6
B) End milling.	CO6	6
C) Gear finishing processes.	CO6	6

*** End ***

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Instructions to the Students:

1. All the questions are compulsory.
2. 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.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(CO)	Marks
Q.1 Solve Any Two of the following.		
A) Differential between Renewable Energy sources and non-Renewable Energy sources.	CO1	6
B) Explain in detail energy reserves in India	CO1	6
C) Explain nuclear fission and Fusion.	CO1	6
Q.2 Solve Any Two of the following.		
A) Define a) Declination angle b) Solar Azimuth angle c) Zenith angle.	CO2	6
B) Explain with neat sketch construction and working of pyranometer.	CO 2	6
C) Calculate angle made by beam radiation with normal to a flat plate collector on May 1 at 09.00 h. The collector is located in New delhi ($28^{\circ} 35'N$, $77^{\circ} 12'E$). It is tilted at an angle of 36° with the horizontal and is pointing due south, also calculate for 12.00 h (Local apparent time).	CO 2	6
Q.3 Solve Any Two of the following.		
A) Explain the different types of concentration collectors with neat sketch.	CO 2	6
B) Explain testing of flat plate collector with neat sketch.	CO 2	6
C) Explain construction and selection criteria for flat plate collector.	CO 2	6
Q.4 Solve Any Two of the following.		
A) Give the different application of solar energy and explain with neat sketch solar space heating.	CO 3	6
B) Explain construction and working of Photo Voltaic cell.	CO 3	6
C) What is wind energy? Explain selection of site for wind turbine generation system.	CO 4	6
Q.5 Solve Any Two of the following.		
A) What is biomass energy? Explain with neat sketch floating drum type Biogas plant.	CO 4	6
B) Explain with neat sketch 1) Geothermal field. 2) liquid dominated geothermal plant.	CO 4	6
C) What is OTEC system? Explain working of open cycle OTEC system.	CO 4	6

*** End ***