



Mahatma Gandhi Mission University
Jawaharlal Nehru Engineering College, Aurangabad
End-Semester Examination - 2022

Program Name: B.Tech in Electrical Engineering

SEM: IV

Course Code: 20UEE402D **Name of the Course** – Electrical Power Transmission and Distribution

Maximum Marks: 60

Duration: 3 Hrs

Q.1	Solve any two question from following	CO	L	PI	Marks(10)
1.	Compare the volume of conductor material required in d.c. single phase and three-phase a.c. system	CO1	L1	1.2.1	5
2.	Discuss the advantages of high transmission voltage.	CO1	L2	1.3.1	5
3.	Explain about typical AC power supply System	CO1	L1	1.2.1	5
Q.2	Solve any two question from following	CO	L	PI	Marks(10)
1.	What is the most general criterion for the classification of cables? Draw the sketch of a single-core low tension cable and label the various parts	CO1	L1	1.2.1	5
2.	Describe the various methods of laying underground cables. What are the relative advantages and disadvantages of each method?	CO2	L2	1.2.1	5
3.	Discuss the various conductor materials used for overhead lines. What are their relative advantages and disadvantages?	CO2	L1	1.2.1	5
Q.3	Solve any two question from following	CO	L	PI	Marks(10)
1.	What do you understand by the constants of an overhead transmission line? explain in detail	CO3	L1	1.2.1	5
2.	Find an expression for the flux linkages (i) due to a single current carrying conductor	CO3	L2	1.2.1	5

	in parallel current carrying conductors				
3.	Derive an expression for the loop inductance of a single phase line	CO3	L3	1.1.1	5
Q.4	Solve any two question from following	CO	L	PI	Marks(10)
1.	What is the purpose of an overhead transmission line? How are these lines classified?	CO4	L2	1.2.1	5
2.	Discuss the terms voltage regulation and transmission efficiency as applied to transmission line	CO4	L2	1.2.1	5
3.	Deduce an expression for voltage regulation of a short transmission line, giving the vector diagram.	CO4	L2,	1.3.1	5
Q.5	Solve any two question from following	CO	L	PI	Marks(10)
1.	What is the purpose of interconnector in a d.c. ring main distributor?	CO5	L2	1.2.1. 1.3.1	5
2.	Show with a neat diagram how unbalanced loads in a 3-wire d.c. system cause unequal voltages on the two sides of the neutral	CO5	L2	1.2.1. 1.3.1	5
3.	Explain the following systems of distribution: (i) Radial system (ii) Ring main system (iii) Interconnected system	CO5	L2, 3	1.1.1 1.3.1	5
Q.6	Solve any two question from following	CO	L	PI	Marks(10)
1.	What are the different types of bus-bar arrangements used in sub-stations ? Illustrate your answer with suitable diagrams.	CO6	L3	1.2.1. 1.3.1	5
2	Draw the key diagram of a typical 11 kV/400 V indoor sub-station.	CO6	L3	1.2.1. 1.3.1	5
3	What is a transformer sub-station? What are the different types of transformer sub-stations? Illustrate your answer with a suitable block diagram.	CO6	L3	1.2.1. 1.3.1	5
End					

MGM University
Jawaharlal Nehru Engineering College, Aurangabad
End Semester Examination – June 2022

Course: B. Tech in Electrical Engineering
Subject Name: Digital Electronics and Microprocessor
Max Marks: 60

Sem: IV
Code: 20UEE404D
Duration: -3 Hr.

Instructions to the Students:

1. All question should be compulsory
2. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
3. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

		CO	BL	Marks
Q. 1	Solve Any two of the following.			10
(A)	Convert (1000101) and (1011011) from Binary to Decimal.	2	1	
(B)	Convert (1000101) and (1011011) from Binary to Gray Code.	1	1	
(C)	State and Explain Different boolean algebra rules used for Digital Electronics.	2	1	
Q.2	Solve Any Two of the following.			10
(A)	Explain TTL Logic Family in Detail.	2	1	
(C)	Explain RTL Logic Family in Detail.	2	1	
(B)	Explain DTL Logic Family in Detail.	3	3	
Q.3	Solve Any Two of the following.			10
(A)	Explain J-K Flipflop with its truth table.	2	1	
(B)	Realize AND or and.NOT GATE using NAND Gate.	2	3	
(C)	Draw and Explain Universal Logic Gates.	1	1	
Q. 4	Solve Any two of the following.			10
(A)	Discuss Half adder and Half Subtractor	2	1	
(B)	Develop 16:1 MUX using 2:1 Mux Configuration.	1	1	
(C)	Explain BCD to seven segment Decoder.	2	1	
Q.5	Solve Any Two of the following.			10
(A)	Develop MOD 5 Asynchronous Counter.	2	1	
(B)	Explain SIPO Shift Register.	2	1	
(C)	Explain Analog to Digital Converter in detail.	2	1	
Q.6	Solve Any Two of the following.			10
(A)	State and Explain features of 8085.	2	1	
(B)	Draw and Explain Flag Register of 8085.	2	1	
(C)	Explain Different Addressing modes of 8085.	2	1	
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Name of the Program : S.Y.B.Tech

Semester : IV

Course Code: BEET2202 Name of the Course: Electrical Measurement and Instrumentation

Max Marks: 60

Time:3hrs

Instructions:

1. Solve any Five questions.
2. Mark to Left indicate full marks.

Q. 1. a) What is necessity of signal conditioning required in measurement system. 5

b) Compare various measurement system on its characteristics bases. 7

OR

Q.1. a). Give different methods for error analysis. 5

b) . What are the different parameters considered in selection of measurement system.7

Q.2. a) Explain the working of Iron coil instrument. 5

b) Discuss the working of Power factor meter. 7

OR

Q.2 .a) What are causes of Loading effect on instrument performance. 7

b) Give the working of AC/DC Potentiometer. 5

Q.3. a) Explain the Measurement of inductance using bridges. 7

b) Discuss the working of Electrodynamometer type watt meter. 5

OR

Q.3. a) Discuss working of Construction and torque equation for watt meter. 7

b) . Discuss the loss of charge method for measurement of high resistance. 5

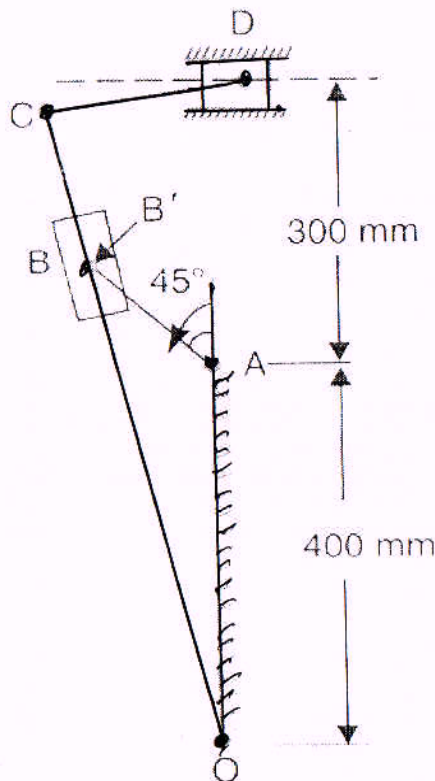
Q.4. a) Explain the necessity of Trigger Generator in C.R.O. 5

b) . Explain shortly the working of Hall Effect transducers and piezoelectric transducers. 7

OR

OR

b) A mechanism of a crank and slotted lever quick return motion is shown in Fig. below. If the crank rotates counter clockwise at 120 r.p.m., determine for the configuration shown, the velocity of the ram D. Also determine the angular acceleration of the slotted lever. Crank, $AB = 150$ mm; Slotted arm, $OC = 700$ mm and link $CD = 200$ mm. (10)



Q3. Solve any two

a) The crank and connecting rod of a reciprocating engine are 150 mm and 600 mm respectively. The crank makes an angle of 60° with the inner dead centre and revolves at a uniform speed of 300 r.p.m. Find, by Klein's constructions 1. Velocity and acceleration of the piston. (5)

b) The inertia of the connecting rod can be replaced by two masses concentrated at two points and connected rigidly together. How to determine the two masses so that it is dynamically equivalent to the connecting rod? (5)

c) State and explain D'Alembert's principle. (5)

Q4. Solve any two

a) Explain the phenomena of 'slip' and 'creep' in a belt drive. (5)

b) Two pulleys, one 450 mm diameter and the other 200 mm diameter are on parallel shafts 1.95 m apart and are connected by a crossed belt. Find the length of the belt required and the angle of contact between the belt and each pulley. (5)

c) Compare belt drive and chain drive. (5)

Q5. Solve any one

a) i) Explain with neat sketches different types of followers. (3)

ii) A disc cam is to give "uniform motion" to a knife edge follower during out stroke of 50 mm during the first half of the cam revolution. The follower again returns to its original position with "uniform motion" during the next half of the revolution. The minimum radius of the cam is 50 mm and the diameter of the cam shaft is 35 mm. Draw the profile of the cam when the axis of follower passes through the axis of cam shaft. (7)

OR

b) A cam, with a minimum radius of 25 mm, rotating clockwise at a uniform speed is to be designed to give a roller follower, at the end of a valve rod, motion described below : 1. To raise the valve through 50 mm during 120° rotation of the cam ; 2. To keep the valve fully raised through next 30° ; 3. To lower the valve during next 60° ; and 4. To keep the valve closed during rest of the revolution i.e. 150° : The diameter of the roller is 20 mm and the diameter of the cam shaft is 25 mm. Draw the profile of the cam when the line of stroke of the valve rod passes through the axis of the cam shaft. The displacement of the valve, while being raised and lowered, is to take place with simple harmonic motion. Determine the maximum acceleration of the valve rod when the cam shaft rotates at 100 r.p.m. (10)

Q6. Solve any one

a) A rotating shaft carries four unbalanced masses 18 kg, 14 kg, 16 kg and 12 kg at radii 50 mm, 60 mm, 70 mm and 60 mm respectively. The 2nd, 3rd and 4th masses revolve in planes 80 mm, 160 mm and 280 mm respectively measured from the plane of the first mass and are angularly located at 60° , 135° and 270° respectively measured clockwise from the first mass looking from this mass end of the shaft. The shaft is dynamically balanced by two masses, both located at 50 mm radii and revolving in planes mid-way between those of 1st and 2nd masses and midway between those of 3rd and 4th masses. Determine, graphically or otherwise, the magnitudes of the masses and their respective angular positions. (10)

OR

b) A single cylinder reciprocating engine has speed 240 r.p.m., stroke 300 mm, mass of reciprocating parts 50 kg, mass of revolving parts at 150 mm radius 37 kg. If two-third of the reciprocating parts and all the revolving parts are to be balanced, find: 1. the balance mass required at a radius of 400 mm, and 2. the residual unbalanced force when the crank has rotated 60° from top dead centre. (10)

End of paper

MGM UNIVERSITY
Jawaharlal Nehru Engineering College
End Semester Examination – June 2022

Course: B. Tech in Electrical Engineering
Subject Name: AC Machine
Max Marks: 60

Sem: IV
Subject Code: 20UEE403D
Date: - 08-05-2022

Duration: - 3 Hr.

Instructions to the Students:

1. All question should be compulsory
2. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
3. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

		CO	BL	Marks
Q. 1	Solve Any two of the following.			10
(A)	Explain Operation of transformer with No-load condition.	2	1	
(B)	Derive EMF equation of single-phase transformer	1	1	
(C)	State difference between core type and shell type transformer	2	1	
Q.2	Solve Any Two of the following.			10
(A)	Discuss Cooling methodology used in three phase transformers	2	1	
(C)	Explain Constructional Features of three phase transformer	2	1	
(B)	A Single-Phase transformer delivers 10A, 220V to a resistive load while the Primary draws 6A at 0.9 lagging P.F. from 450 V; 50 HZ supply. The turn's ratio of the autotransformer is 2. Calculate efficiency and regulation under this condition.	3	3	
Q.3	Solve Any Two of the following.			10
(A)	Discuss starting methods of three Phase Induction motor	2	1	
(B)	A stator of three phase Induction Motor has 3 slots per pole per phase. If supply frequency is 50Hz, calculate (i) No of stator poles produced and total no of slots on the stator (ii) Speed of rotating stator flux	2	3	
(C)	Explain OC & SC test on Induction Motor	1	1	
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		CO	BL	Marks
Q. 4	Solve Any two of the following.			10
(A)	Explain winding factor and pitch factor in synchronous Machine	2	1	
(B)	Derive EMF equation of Alternator	1	1	
(C)	State condition for Parallel operation of Synchronous Generator	2	1	
Q.5	Solve Any Two of the following.			10
(A)	Discuss methods of speed control for three phase Induction Motor	2	1	
(C)	Explain Torque equation of three phase Induction Motor	2	1	
(B)	Explain Brief classification of AC Machine	2	1	
Q.6	Solve Any Two of the following.			10
(A)	Discuss Concept of Double field revolving Theory	2	1	
(B)	Explain Capacitor start & Run single Phase Induction motor	2	1	
(C)	Explain Shaded Pole single phase Induction motor	2	1	
 END.....			

Mahatma Gandhi Mission University
Jawaharlal Nehru Engineering College, Aurangabad
End-Semester Examination – 2021_22

Course: SY B.Tech in Electrical

SEM: III

Subject: Electronic devices and circuits

Course Code: (20UEE303D)

Maximum Marks: 60 **Date:** 22 DEC 2021

Duration: 2 Hr

Q.1	A. Choose the correct option.	CO	BL	PI	Marks(2)
1	The photodiode is a device that in..... A. reverse bias B. Forward bias C. both A and B D. None of the these	CO1	L1	1.2.1	1
2	The tunnel diode exhibits a special characteristic known as A. Negative resistance B. positive resistance B. C. exponential rise D. oscillating	CO1	L1	1.2.1	1
Q.1	B. Attempt any <u>TWO</u> the following questions.	CO	BL	PI	Marks(8)
1	Discuss V-I characteristics of PN junction diode.	CO1	L3	1.2.1	4
2	Discuss the working principle of LED with neat and labeled diagram.	CO1	L3	1.3.1	4
3	Discuss the operation of photodiode with neat and labeled diagram.	CO1	L3	1.3.1	4
Q.2	A. Choose the correct option.	CO	BL	PI	Marks(2)
1	The ratio of change in collector current to the change in emitter current at constant V_{CB} is known as..... I. α II. β III. γ IV. Ω	CO2	L2	1.2.1	1
2	In common emitter connection input current is I. base current II. Collector current III. Emitter current IV. None of the these	CO2	L1	1.2.1	1
Q.2	B. Attempt any <u>TWO</u> the following questions.	CO	BL	PI	Marks(8)
1	Sketch and discuss the drain characteristics of JFET.	CO2	L3	1.3.1	4
2	Compare CB, CE and CC configurations of BJT.	CO2	L3	1.3.1	4
3	Compare BJT and MOSFET.	CO2	L3	1.3.1	4
Q.3	A. Choose the correct option.	CO	BL	PI	Marks(2)
1	A limiter circuit is also known as..... I. clipper II. Clamper III. Rectifier IV. filter	CO3	L1	1.2.1	1
2	The circuit which adds DC shift in the output waveform is I. clipper II. Clamper III. Rectifier IV. Amplifier	CO3	L1	1.2.1	1