Course Code: SOE-D-EE501

OP JINDAL UNIVERSITY

Mid Semester Examination, October-2023

Diploma 5th Semester [01DE060]

Electrical Engineering Department

Utilization of Electric Energy & Electric Traction

Time: 2 Hrs. **Max. Marks: 50**

Note:

			M	CO	KL
Section A (20 marks) Answer any 4 questions [04 x 05 marks=20 marks]					
1	a.	Which drive is also called as Line shaft drive and why? Give the name of the drive which is used for (1) Crane (2) Metal cutting machine tools (3) JCB (4) conveyer belt (5) Grain processing industries	5		
	b.	Explain the types of industrial loads in terms of 1. continuous Duty load, 2. Intermittent Duty Load 3. variable or Fluctuating Loads 4. short time duty Load	5		
	c.	Define "Electric Traction" Write the Advantages and disadvantages of 25KV, 50Hz supply in traction system	5		
	d.	Define 1. Heating Time Constant 2. Cooling Time Constant 3. Tractive effort 4. adhesive weight	5		
	e.	What do you understand by Load Equalization? explain with diagram.	5		
Section B (30 marks) Answer any 3 questions [03 x 10 marks=30 marks]					
2	a.	Draw the block diagram and explain the basic elements of an electric drive system. Also write the advantages and disadvantages of Electric drive.	10		
	b.	What are the factors influencing while selection of an electric drive? Also write the application of Electric Drive.	10		
	c.	**Review the existing types of electric traction system in India.**	10		
	d.	Describe the type of Electric Drive on following basis and also compare 1 and 2 **1. Individual drive 2. Group drive** 3. Multi motor drive	10		

OP JINDAL UNIVERSITY, RAIGARH (C.G.)

MID SEMESTER EXAMINATION, OCTOBER-2023

Program Name: **Diploma** Program Code: **01DE060** Time: **02 Hrs**

Semester: **5th** Branch: **ELECTRICAL ENGG.** Max. Marks: **50**

Course Code: **SOE-D-EE502** Course Name: **MPMC**

Note: **Section A:** All Questions are compulsory [05 x 02 marks=10 marks]
Section B: Answer any 4 questions out of 5 [04 x 04 marks=16 marks]
Section C: Answer any 3 questions out of 5 [03 x 08 marks=24 marks]

Q. 1.	Section [A]
a)	Convert binary to decimal number- i) 1010 1101 ii) 1001 0011
b)	Convert hexadecimal to binary number- i) 3FB h ii) E2D9 h
c)	Describe the working of following pin of 8086 processor- i) ALE ii) INTR
d)	Convert $(627)_8$ number into hexadecimal number.
e)	Discuss the ROM and RAM memory.

Q. 2.	Section [B]
a)	Differentiate between CISC and RISC based architecture.
b)	Draw the digital computer system and explain each block.
c)	Define interrupt and its types.
d)	Write a program to subtract two 8-bit numbers and store the result in accumulator.
e)	Find the addition of two hexadecimal number C3A h and BDC h and show the result in binary form.

Q. 3.	Section [C]
a)	What is microprocessor. Explain the working of microprocessor 8086 with its architecture diagram.
b)	Write down the applications of microprocessor and microcontroller.
c)	Explain logic gates with their truth table.
d)	Compare the basic computer model on Harvard and Von Neumann model.
e)	Interface two 4KB RAM with microprocessor 8086 with diagram and address range.

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Course Code: SOE-D-ME-501

OP JINDAL UNIVERSITY

Mid Semester Examination, October-2023

Diploma 5th Semester [Program code-01DE40]

Mechanical Engineering

Energy Conversion-I

Time: 2 Hrs. **Max. Marks: 50**

Note:

			M	CO	KL
Section A (10 marks) All Questions are compulsory [05 x 02 marks=10 marks]					
1	a.	Define a boiler or a steam generator.	2		
	b.	What do you mean by boiler mountings?	2		
	c.	What are boiler accessories?	2		
	d.	What do you mean by steam condenser?	2		
	e.	Define cooling towers and classify it.	2		
Section B (16 marks) Answer any 4 questions [04 x 04 marks=16 marks]					
2	a.	Notify five names of boiler mountings and five names of boiler accessories.	4		
	b.	Write the names of five high-pressure and five low pressure boilers.	4		
	c.	Communicate the function of steam nozzle used with steam turbines.	4		
	d.	Write the application of steam nozzles.	4		
	e.	Differentiate between jet condenser and surface condenser.	4		
Section C (24 marks) Answer any 3 questions [03 x 08 marks=24 marks]					
3	a.	With neat sketch explain the construction and working of reaction turbine.	8		
	b.	Explain with neat sketch the construction and working of impulse turbine.	8		
	c.	Describe the working of counter flow type jet condense with neat sketch.	8		
	d.	Clarify the down flow type surface condenser with neat sketch.	8		
	e.	With neat sketch explain the working of natural draft cooling tower.	8		

Course Code: SOE-D-ME 502

OP JINDAL UNIVERSITY

Mid Semester Examination, October-2023

Diploma 5th Semester

Mechanical Engineering

Industrial Engineering & Production Management

Time: 2 Hrs. **Max. Marks: 50**

Note: Attempt All questions compulsory.

			M	CO	KL
Section A (20 marks)					
Answer any 4 questions [04 x 05 marks=20 marks]					
1	a.	**Define work study. Explain the importance of work study.**	5	2	
	b.	**What is the purpose of improving productivity? Describe the role of work study in improving productivity.**	5	2	
	c.	**What are Therbligs? Also write their importance.**	5	2	
	d.	**What are the Need for a suitable location.**	5	1	
	e.	What do you mean by industrial Engineering? Write the Scope and objectives.	5	1	
Section B (30 marks)					
Answer any 3 questions [03 x 10 marks=30 marks]					
2	a.	**Define method study. What are the objectives of method study? Also mention the procedure of method study.**	10	2	
	b.	**Draw the man type and material type flow process chart?**	10	2	
	c.	**Describe work measurement and its techniques.**	10	1	
	d.	**Give a comparison between process layout and product layout.**	10	1	

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Course Code: 01DE040

OP JINDAL UNIVERSITY

Mid Semester Examination, October-2023

Diploma, 5th Semester [01DE040]

Mechanical Engineering

Design of Machine Elements [Subject Code: SOE-D-ME503]

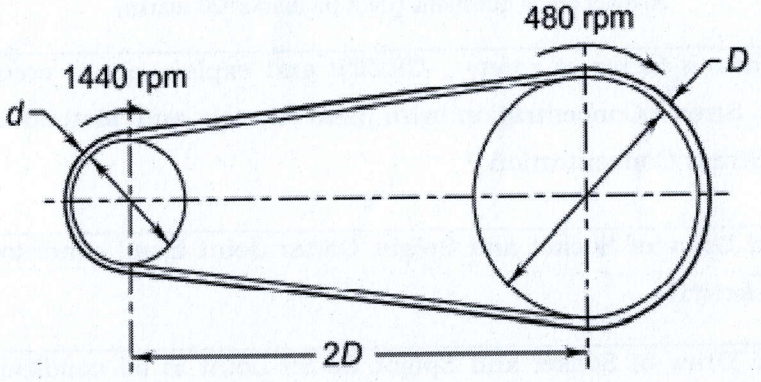
Time: 2 Hrs. **Max. Marks: 50**

Note: Design Data Book and scientific calculator Allowed

			M	CO	KL
Section A (20 marks) Answer any 4 questions [04 x 05 marks=20 marks]					
1	a.	Define following factor of safety , CREEP and explain about creep curve and Stress Concentration with neat sketch and Method of Reducing Stress Concentration ?	5	CO1	I
	b.	Design and Draw of Socket and Spigot Cotter Joint in all condition with neat sketch?	5	CO2	I
	c.	Design and Draw of Socket and Spigot Cotter Joint in all condition with neat sketch??	5	CO2	I
	d.	Define belt drive and Classification of flat belt drives along with appropriate diagram ?	5	CO1	I
	e.	Difference between open and cross belt drive ?	5	CO2	I

Section B (30 marks)

Answer any 3 questions [03 x 10 marks=30 marks]

2	a.	The layout of a leather belt drive transmitting 15 kW of power is shown in Fig. below The center 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/mm2. 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 the belt tensions  	10	CO2	II
	b.	Find the efficiency of the following riveted joints : 1. Single riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 50 mm. 2. Double riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 65 mm. Assume Permissible tensile stress in plate = 120 MPa Permissible shearing stress in rivets = 90 MPa Permissible crushing stress in rivets = 180 MPa	10	CO2	II
	c.	Design a cotter joint to support a load varying from 30 kN in compression to 30 kN in tension. The material used is carbon steel for which the following allowable stresses may be used. The load is applied statically. Tensile stress = compressive stress = 50 MPa ; shear stress = 35 MPa and crushing stress = 90 MPa.	10	CO3	II
	d.	Design a knuckle joint to transmit 150 kN. The design stresses may be taken as 75 MPa in tension, 60 MPa in shear and 150 MPa in compression	10	CO3	II

Course Code: SOE-D-MT501

OP JINDAL UNIVERSITY

Mid Semester Examination, October-2023

Diploma 5th Semester [01DE050]

Metallurgical Engineering

Non-Ferrous Metallurgy

Time: 2 Hrs. **Max. Marks: 50**

Note:

			M	CO	KL
Section A (20 marks)					
Answer any 4 questions [04 x 05 marks=20 marks]					
1	a.	Define the terms ore, minerals, metal and gangue.	5		
	b.	What do you understand by extractive metallurgy? Differentiate between metallic & non-metallic minerals.	5		
	c.	Name two heavy and light metals and their deposits in India.	5		
	d.	Enlist the advantages of pyrometallurgical method.	5		
	e.	Discuss the difference between matte and reduction smelting.	5		
Section B (30 marks)					
Answer any 3 questions [03 x 10 marks=30 marks]					
2	a.	Discuss the main resources of metals and draw the flow sheet for production of metals from its ore.	10		
	b.	Explain the magnetic separation method with the help of neat labelled diagram.	10		
	c.	What do you understand by roasting operation? Discuss the oxidizing and chloridizing method with the help of example.	10		
	d.	Draw the flow sheet for the extraction of metal using hydrometallurgy.	10		

OP JINDAL UNIVERSITY, RAIGARH (C.G.)

MID SEMESTER EXAMINATION, OCTOBER-2022

Program Name: **Diploma – Meta** Program Code : **01DE050** Time : **02 Hrs**

Semester: **5th** Branch : METALLURGICAL ENGINEERING

Max. Marks : **50**

Course Code: **SOE-D-MT502** Course Name: **Metal Working Process**

Note: **Section A:** All Questions are compulsory [05 x 02 marks=10 marks]
Section B: Answer any 4 questions out of 5 [04 x 04 marks=16 marks]
Section C: Answer any 3 questions out of 5 [03 x 08 marks=24 marks]

Q. 1.	Section [A]
a)	What is the basic condition for plastic deformation to take place in any material?
b)	Define the two basic mechanisms by which plastic deformation takes place in crystal structures?
c)	Define yield criteria. Name the most commonly used yield criteria
d)	Name the common processes that fall under metal working processes.
e)	Write the applications of hot and cold rolling.

Q. 2.	Section [B]
a)	Explain cluster mill in detail with diagram.
b)	Define angle of bite and no slip angle. Write the factors affecting the maximum permissible value of angle of contact.
c)	If the maximum reduction of rolling slab is from 50 to 25 mm, calculate the value of COF. If the roll diameter is 350 mm, find the length of projection of arc of contact.
d)	In a single pass rolling process using 800 mm diameter of steel rolls, a strip of width 370 mm and thickness 12 mm undergoes 15% reduction of the thickness. What would be the angle of bite in radians.
e)	The elongation factor during rolling of an ingot is 2.1. What would be the minimum number of passes needed to produce a section of 150 X 150 mm from an ingot of 500 X 500 mm.
Q. 3.	**Section [C]**
a)	Explain in detail the variables of metal forming.
b)	The homogeneous state of stress in MPa for a metal part undergoing plastic deformation is $T=\begin{bmatrix} 10 & 5 & 0 \\ 5 & 20 & 0 \\ 0 & 0 & -10 \end{bmatrix}$ Using von- mises criteria, estimate shear yield stress in MPa.
c)	If the yield stress of steel is 950 MPa, determine whether yielding will occur on the basis of tresca criteria. The stress state in MPa is given by $T=\begin{bmatrix} 0 & 0 & 0 \\ 0 & -400 & 0 \\ 300 & 0 & -10 \end{bmatrix}$
d)	Define the formability of metals. Explain the method in detail to predict the formability of metals.
e)	Name the materials used for rolling mills. Also explain in detail the hot and cold rolling process of steel with applications of each.

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Course Code: SOE-D-MT503

OP JINDAL UNIVERSITY

Mid Semester Examination, October-2023

Diploma 5th Semester [01DE050]

Metallurgical Engineering

Industrial Management and Entrepreneurship

Time: 2 Hrs. **Max. Marks: 50**

Note:

			M	CO	KL
Section A (20 marks)					
Answer any 4 questions [04 x 05 marks=20 marks]					
1	a.	Define industrial accident according to the Factories Act, 1948. Define any two: (i) Accident (ii) Incident (iii) near-miss event	5		
	b.	Give an example of interrelationship between various departments with diagram.	5		
	c.	What is meant by Human relations at workplace? List the factors affecting human relations.	5		
	d.	What are the characteristics of professionalism?	5		
	e.	What is planning in management? Discuss the steps in planning.	5		
Section B (30 marks)					
Answer any 3 questions [03 x 10 marks=30 marks]					
2	a.	What are the different types of the organizational structure? Explain any one of the type in detail.	10		
	b.	What is the need of leadership in an organization? Describe the various functions of a leader.	10		
	c.	What are the different methods of improving motivation in an organization? Explain in brief.	10		
	d.	Explain how the industrial accidents can be prevented.	10		