



QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAM. OF SECOND SEMESTER - THIRD YEAR (5TH SEM.) 2023 OF 20 BATCH B.E (ME)

SUBJECT: AUTOMOBILE ENGINEERING

Dated: 24.11.2023

Maximum Marks: 30

Time Allowed: 02 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.	QUESTION	CLO	Taxonomy Level	PLO	Marks
Q. 01	Illustrate difference between single and multi-cylinder engines with diagram and suggest how to reduce the knocking of IC engine?	1	3	3	10
Q. 02	Explain the types of cooling systems. Write the Advantages and Disadvantages of the cooling System.	2	2	12	10
Q. 03	Describe working principle of Anti-lock braking system (ABS) system, also define ABS Major Components.	2	2	12	10

Good Luck



QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER-THIRD YEAR OF 20 BATCH B.E (ME)

SUBJECT: TOTAL QUALITY MANAGEMENT

Dated: 17.11.2023

Maximum Marks: 30

Time Allowed: 02 Hour.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q #	Question	Marks	CLO	Taxonomy Level
Q.01	Describe the important tools for inspection to determine the conformance requirement of any product specifications.	10	1	2
Q.02	In industry you will face the circumstances where direct measurement of product is possible. Some time in case of burns, cracks, voids, dents, scratches, missing and wrong components, rust where direct measurement is not possible. Therefore, analyze above situation recommend the control charts and their formulation.	10	2	4
Q.03	How system reliability can be formulated in case of mechanical, electrical and electronic components.	10	3	3

Good Luck

SUBJECT: HEAT AND MASS TRANSFER

Dated: 21.11.2023

Maximum Marks: 60

Time Allowed: 3 Hours

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.		Description	Marks	CLO	Taxonomy level
01	(a)	What do you know about Radiation heat transfer? Explain their various applications. Describe Black body and White body with their practical examples.	05	1	C2
	(b)	What do you know about mass transfer? Explain their various applications in terms of nature and industrial processes. Define Fick's law of diffusion.	07	1	C2
02	(a)	What is meant by Heat exchanger? Describe function and applications of heat exchanger.	05	1	C2
	(b)	With the help of figure and diagram explain working principle of Parallel and Counter flow heat exchanger.	07	1	C2
03		Derive an expression for determining Critical radius of insulation for sphere.	12	2	C3
04		Air at 40°C is flows over a flat plate of 0.9 m at a velocity of 3 m/sec. Calculate the following: 1. Overall drag coefficient 2. Average shear stress 3. Compare the average shear stress with local shear stress (shear stress at the trailing edge) Properties of air at 40°C: $\rho = 1.128 \text{ kg/m}^3$, $\nu = 16.96 \times 10^{-6} \text{ m}^2/\text{sec}$, $Pr = 0.699$, $K = 25.56 \times 10^{-3} \text{ W/m.K}$	12	3	C4
05		Engine oil flows through a 50 mm diameter tube at an average temperature of 147°C. The flow velocity is 80 cm/sec. Calculate the average heat transfer coefficient if the tube wall is maintained at a temperature of 200°C and it is 2 m long. Properties of engine oil at 147°C: $\rho = 816 \text{ kg/m}^3$, $\nu = 7 \times 10^{-6} \text{ m}^2/\text{sec}$, $Pr = 116$, $K = 133.8 \times 10^{-3} \text{ W/m.K}$	12	3	C4

The End

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH



FINAL SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER-THIRD YEAR, 2023 OF 20-BATCH B.E (ME)

SUBJECT: POWER PLANTS

Dated: 28.11.2023

Maximum Marks: 60

Time Allowed: 03 Hour.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q.	QUESTION	Marks	CLO	LEVEL
Q. 01	(a) What is Brayton cycle? Describe how regeneration improves the thermal efficiency of the Brayton cycle	06	1	C-1
	(b) What is hydroelectricity? Demonstrate its power production mechanism	06	1	C-1
Q. 02	(a) How power is produced from wind? Describe types of wind turbines in the context of orientation of rotation with respect to the ground	06	2	C3
	(b) Differentiate between dry-steam and flash-steam geothermal power plants	06	2	C3
Q. 03	(a) Sketch and describe solar parabolic trough power plant	06	2	C3
	(b) What is hybrid power system? Sketch a wind-solar-hydro hybrid system and describe shortly.	06	2	C3
Q. 04	(a) What is boiling water reactor? How power is produced using this type of reactor, describe with sketch	06	3	C2
	(b) What is fuel cell technology? Describe working mechanism of a proton exchange membrane (PEM).	06	3	C2
Q. 05	(a) Explain environmental impacts of fossil fuel power plants	06	3	C2
	(b) Discuss environmental impacts of Biomass and Tidal energy power plants	06	3	C2

The End

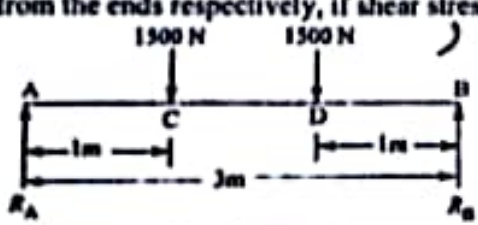


Dated: 01.12.2023

Maximum Marks: 60

Time Allowed: 03 Hour

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. No.	Description	CLO	Taxonomy level	PLO	Marks
1	(a) Define anti-frictional bearing and discuss its advantages & disadvantages.	1	C3	1	06
	(b) Why gears are used and how they are classified?				06
2	(a) Develop the equation for the energy stored in Flywheel.	2	C6	3	06
	(b) Derive the equation for frictional torque of foot-step or pivot bearing.				06
3	(a) Design a hollow steel shaft that transmitting 500kW at 200rpm from motor to pump and has the maximum shear stress is 60MPa. Analyze the outside and inside diameter of shaft, if the outside diameter is twice of inside diameter. Assuming the maximum torque is 25% greater than the mean torque.	3	C4	2	06
	(b) Determine the diameter of shaft, which is made of medium carbon steel that required to transmit 100kW at 300rpm. The supported length of the shaft is 3m. It carries two pulleys each weighing 1500N supported at a distance of 1m from the ends respectively, if shear stress is 60N/mm ² . 				06
4	(a) Design a cast iron unprotected type flange coupling to transmit 20kW at 1000rpm. from an electric motor to a compressor. The service factor may be assumed as 1.35. The shear stress for shaft, bolt and key material is 40MPa, crushing stress for bolt and key is 80MPa, whereas the shear stress for cast iron is 8MPa.	3	C4	2	06
	(b) Design a footstep bearing that supports a shaft of 150mm diameter, which is counter-bored at the end with a hole diameter of 50mm. if the bearing pressure is limited to 1.5N/mm ² and the speed is (10 x your roll number) rpm. Analyze (a) load on bearing (b) the power lost in the friction (c) the heat generated at the bearing surface. Assume the coefficient of friction is 0.015.				06
5	Design a flywheel for petrol engine having 300mm diameter. The turning moment diagram repeats itself at every half revolution of the engine at the area below and above the mean turning moment line, taken in order are: 295mm ² , -685mm ² , 40mm ² , -340mm ² , 960mm ² , -270mm ² . The coefficient of fluctuation of speed is 0.05 and the engine runs at 1800rpm. Determine the mass of flywheel rim and cross-sectional dimensions of rim when the $b = 2t$. Assume the density of rim material as 500kg/m ³ . The scale of turning moment diagram; 1mm = 5Nm and crank angle 1mm = $\pi/180$ rad.	3	C4	2	12



QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF SECOND SEMESTER – THIRD YEAR OF 20-BATCH, B.E (ME)

SUBJECT: ME318-POWER PLANTS

Dated: 05.10.2023

Maximum Marks: 20

Time Allowed: 1 Hour

NOTE: ATTEMPT ANY TWO QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q#	Question	Marks	CLO	Level
Q. 01	(a) Sketch and describe the working mechanism of a water tube boiler.	05	1	C2
	(b) What is function of boiler accessories? Discuss atleast five accessories of the boiler	05	1	C2
Q. 02	(a) What is combined cycle power plant? Explain with an example.	05	1	C2
	(b) Sketch and describe the operational mechanism of turbofan engine.	05	1	C2
Q. 03	(a) What is combined heat and power plant (CHP)? How it works.	05	1	C2
	(b) What is diesel engine power plant? Enlist some of its applications.	05	1	C2

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID SEMESTER REGULAR EXAMINATION OF SECOND SEMESTER–THIRD YEAR OF 20-BATCH, B.E (ME)

SUBJECT: TOTAL QUALITY MANAGEMENT

Dated: 02.10.2023

Maximum Marks: 10

Time Allowed: 45 Minutes

NOTE: ATTEMPT ANY TWO QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q#	Question	Marks	CLO
Q.01	Describe the events contributed to current day stress on quality.	05	1
Q.02	Analysis the Tenner and De Toro quality frame work for continuous improvement.	05	2
Q.03	Enlist Kaoru Ishikawa basic seven quality tools and its application in industry to solve quality problems.	05	3

Good Luck



QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF SECOND SEMESTER – THIRD YEAR (6TH SEMESTER) 2023, 20-BATCH, B.E (ME)

SUBJECT: MACHINE DESIGN & CAD-II

Dated: 06.10.2023

Maximum Marks: 20

Time Allowed: 01 Hour.

NOTE: ATTEMPT ANY TWO QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS. WHEREAS, Q.NO.1 IS COMPULSORY.

Q No.		Question	Marks	Taxonomy Level	CLO
Q. 01	(a)	How would you explain the concept of mechanical design and discuss the design process?	5	C2	1
	(b)	Define Shaft coupling, elaborate on its applications, and classify it into various types.	5		
Q. 02	(a)	In designing of Shaft, develop the equation of twisting moment for solid and hollow shafts, when shaft is subjected to twisting moment only.	5	C5	2
	(b)	Design a muff or sleeve shaft coupling and derive the equation for the torque transmission through muff & key.	5		
Q. 03		Design and develop the equations for a Clamp or Compression shaft coupling with neat and clean sketch.	10	C5	2

Good Luck



Q. No.	Question	CLO	Taxonomy Level	PLO	Marks
01	Illustrate the function of the SUPERCHARGER of I.C. engines; with the help of a diagram, discuss the working of the I.C. engine.	1	3	3	05
02	Explain the types of lubrication systems. Write the Advantages and Disadvantages of the mist lubrication System.	1	3	3	05
03	Clarify the terms "Spark Ignition" and "compression Ignition"? Explain in detail the Distributor-less Ignition system.	1	3	3	05



Q. No.	Description	Marks	CLO	Taxonomy level
01 (a)	Explain Steady state and Un-Steady state heat transfer. Also describe their suitable examples.	05	1	2
(b)	Define free and forced convection heat transfer processes with practical applications.	05	1	2
02	Heat is conducted through a compound plate composed of two parallel plates of different materials A and B of conductivities 134 W/m.K and 60 W/m.K and each of thickness 36 mm and 42 mm respectively. If the temperature of the outer face of the slab A and that of B are found to be steady at 96°C and 8°C respectively. Find the temperature of the interface A/B.	10	3	4
03	A furnace wall 200 mm thick is made of a material having thermal conductivity of 1.45 W/m.K. The inner and outer surfaces are exposed to average temperatures of 350°C and 40°C respectively. If the gas and air film coefficients are 58 W/m ² .K and 11.63 W/m ² .K respectively. Find the rate of heat transfer through a wall of 2.5 square meters. Also find the temperatures on the two sides of the wall.	10	3	4