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120151/94763

5th Sem. / Chem Engg.

Subject : Environmental Education

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory (10x1=10)

Q.1 Give one example of biotic component.

Q.2 Unit of noise is _____.

Q.3 Solar energy is _____ resource of energy.

Q.4 Define green house effect.

Q.5 Give on effect of water pollution.

Q.6 Write the year in which air act was passed.

Q.7 Give one method of mining.

Q.8 Give one cause of natural pollution.

Q.9 Herbivorous consumer eat only_____.

Q.10 Give an example of harmful gas.

SECTION-B

Note: Very short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

Q.11 Define food chain.

Q.12 Define environmental education.

Q.13 Define soil pollution.

Q.14 Explain biodegradable solid waste.

Q.15 What is land filling?

Q.16 What are non biodegradable pollutants?

Q.17 What is smog?

Q.18 What is social forestry?

Q.19 What is tidal energy?

Q.20 What is the use of recycling?

Q.21 Define solid waste.

Q.22 What is deforestation?

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. 8x5=40

Q.23 Explain scope and importance of environmental education.

Q.24 Explain biodiversity and sustainable development.

Q.25 Write the significance of food chain.

Q.26 Explain effect of water pollution.

Q.27 Explain methods to control noise pollution.

Q.28 Give sources of air pollution.

Q.29 What are the objectives of water act 1974?

Q.30 What is the importance of non conventional resources of energy.

Q.31 Explain Geothermal energy.

Q.32 Explain advantages of Biogas.

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. 3x10=30

Q.33 Classify different types of pollution . Explain water pollution in detail wish it's causes, effects and control measures.

Q.34 Explain in detail the various methods of solid waste management.

Q.35 Explain the impact of mining on various things in the environment.

Q.36 Write short note on two:

a) Green house effect.

b) Tidal energy.

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181752/171752/
121752/031752

5th Sem. / Mechanical Engg.

Subject : Refrigeration and Air Conditioning

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objectives questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

Q.1 Write the SI unit of refrigeration effect. (CO-1)

Q.2 Define refrigeration. (CO-1)

Q.3 One TON of refrigeration is equal to_____ (CO-1)

Q.4 C.O.P of domestic air conditioner as compared to that of domestic refrigertor is..... (CO-2)

Q.5 Name the basic processes of vapour compression refrigeration system. (CO-2)

Q.6 Why is ammonia used in food refrigeration. (CO-2)

Q.7 Throttle valve are used in..... (CO-2)

Q.8 Name the refrigerant used in window air conditioner is..... (CO-3)

Q.9 Air conditioning is used to..... (CO-8)

Q.10 Define Dry Air. (CO-6)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts 10x2=20

Q.11 Define secondary refrigerants (CO-3)

Q.12 Name any two primary refrigerants. (CO-3)

Q.13 Define Electrolux refrigeration system. (CO-3)

Q.14 Define Humidification. (CO-4)

Q.15 Name two types of rotary compressor. (CO-5)

Q.16 What is expansion valve? (CO-5)

Q.17 Define screw compressor. (CO-5)

Q.18 Define hand operated expansion valve. (CO-5)

Q.19 Define humidity ratio (CO-6)

Q.20 Define saturated air. (CO-6)

Q.21 Define Dry bulb temperature. (CO-6)

Q.22 What is Psychrometric chart? (CO-7)

SECTION-C

Note: Short answer type questions. Attempt any five questions. 8x5=40

Q.23 A refrigerating system operates on reversed Carnot cycle between temp. 25°C and -5°C Determine C.P.O of the system. (CO-1)

Q.24 Write the principle of vapour compression refrigeration system. (CO-2)

Q.25 What is the effect of superheating the suction vapour on the performance of a vapour compression system? (CO-2)

Q.26 Write down the properties of an Ideal refrigerant. (CO-3)

Q.27 Write down the principle of Absorption refrigeration system. (CO-4)

Q.28 Name different types of cooling towers. (CO-5)

Q.29 Explain humidification and dehumidification. (CO-6)

Q.30 Explain blast cooling. (CO-8)

Q.31 Explain Psychrometric Chart. (CO-7)

Q.32 Explain Sensible cooling. (CO-6)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 Explain actual vapour compression refrigeration cycle. (CO-2)

Q.34 Classify compressor and explain working of any one type in detail with suitable diagram.(CO-5)

Q.35 Explain split type air conditioning system with suitable diagram. (CO-7)

Q.36 Write short note on following

a) Azeotrope

b) Pressure enthalpy chart.

c) Cooling Tower

(**Note:** Course outcome/CO is for office use only)

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181753/171753/
121753/031753

5th Sem. / Mechanical Engg. / Mech. (Prod.) /T&D / CAD / CAM / F&F

Subject : Workshop Technology - III

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objective questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

Q.1 Conventional milling is also known as _____. (CO-2)

Q.2 A dividing head is also called _____. (CO-5)

Q.3 In _____ milling, the cutting forces are directed downward. (CO-1)

Q.4 A single threaded hob generates _____ tooth in one revolution. (CO-6)

Q.5 Process of grinding a flat surface in a horizontal position is called _____. (CO-4)

Q.6 Process of material removal in the form of small chips with the help of rotating abrasive wheel is known as _____. (CO-3)

Q.7 The full form of ECM is _____. (CO-7)

Q.8 The LASER stands for _____. (CO-7)

Q.9 In, plasma are machining, the electrodes are made up of _____. (CO-7)

Q.10 _____ is a common method of spraying. (CO-8)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts 10x2=20

Q.11 Define milling. (CO-1)

Q.12 What is the use of T-slot milling cutter? (CO-5)

Q.13 Which natural abrasives are mainly used in grinding wheel? (CO-4)

Q.14 Define grade in connection with grinding wheel. (CO-3)

Q.15 Define gear hobbing? (CO-6)

Q.16 What are main elements of electrochemical machining plant? (CO-7)

Q.17 Give two applications of PAM. (CO-7)

Q.18 Define MRR in electric discharge machining. (CO-5)

Q.19 Define electroplating. (CO-8)

Q.20 Define roughness. (CO-9)

Q.21 Name any two milling machine accessories. (CO-5)

Q.22 Name the types of lapping machines. (CO-9)

SECTION-C

Note: Short answer type questions. Attempt any five questions. 5x8=40

Q.23 Classify the milling machines. (CO-5)

Q.24 Explain straddle milling. (CO-2)

Q.25 Name the work holding devices used on milling machine. (CO-5)

Q.26 What are the different types of grinding wheel? (CO-3)

Q.27 How do you select a grinding wheel? (CO-4)

Q.28 Explain types of gear hobbing. (CO-6)

Q.29 What are the disadvantages of laser beam machining? (CO-7)

Q.30 Explain the working principle of EDM. (CO-7)

Q.31 Explain the process of powder metal method of metal spraying. (CO-8)

Q.32 Write purposes of finishing surfaces. (CO-9)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 Explain any five milling operations. (CO-2)

Q.34 Explain centreless grinding and cylindrical grinding in details. (CO-4)

Q.35 Explain the principle, working, advantages and disadvantages of laser beam machining. (CO-7)

Q.36 Explain honing process and types of honing machines. (CO-9)

(**Note:** Course outcome/CO is for office use only)

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181754/171754/
1217154/031751

5th Sem. / Mechanical Engg./ Mech. (Prod.)/ Mechatronics/ CAD/ CAM

Subject : Theory of Machines

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory (10x1=10)

Q.1 When one of the links of a kinematic chain is fixed, the chain is known as _____. (CO-1)

Q.2 Elliptical trammel is used for drawing _____. (CO-1)

Q.3 _____ is the ratio of the pitch circle diameter to the number of teeth. (CO-4)

Q.4 The difference between the maximum and minimum speeds during a cycle is called the _____. (CO-5)

Q.5 Watt governor is a type of _____ governor. (CO-6)

Q.6 The follower in which the contacting end is a roller is called as _____. (CO-7)

Q.7 The interval of time taken by the motion to repeat itself is called a _____. (CO-9)

Q.8 When the system vibrates under the influence of external force, the vibrations are said to be _____ vibrations. (CO-9)

Q.9 When the particles of a shaft or disc moves in a circle about the axis of the shaft then the vibrations are said to be _____ vibrations. (CO-9)

Q.10 Watt indicator mechanism is an inversion of _____. (CO-1)

SECTION-B

Note: Very short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

Q.11 Define resistant body. (CO-1)

Q.12 Define lower pair. (CO-1)

Q.13 State inversion of mechanism. (CO-1)

Q.14 Define slip of belt. (CO-2)

Q.15 Define addendum of a gear. (CO-4)

Q.16 Define pressure angle of a gear. (CO-4)

Q.17 Define centrifugal governor. (CO-6)

Q.18 What do you understand by isochronism of a governor. (CO-6)

Q.19 State angle of dwell of a cam. (CO-7)

Q.20 Define offset follower. (CO-7)

Q.21 Name two types of cams. (CO-7)

Q.22 Define frequency of vibrations. (CO-9)

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten questions. 5x8=40

Q.23 Define theory of machine and its branches. (CO-1)

Q.24 Define kinematic chain and name types of kinematic chains. (CO-1)

Q.25 Describe simple gear train with neat diagram. (CO-4)

Q.26 Explain turning moment diagram for four stroke petrol engine. (CO-5)

Q.27 Explain the principle of flywheel. (CO-5)

Q.28 What do you understand by the hunting of a governor. (CO-6)

Q.29 Discuss working of Watt's governor. (CO-6)

Q.30 Define the cam. How it works? (CO-7)

Q.31 Explain types of free vibrations. (CO-9)

Q.32 Write note on vibration damping. (CO-9)

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. 3x10=30

Q.33 Discuss in details any two inversions of a double slider crank chain mechanism with the help of neat sketches. (CO-1)

Q.34 Drive an expression for the ratio of driving tensions for a flat belt drive. (CO-3)

Q.35 Explain the construction and working of Hartnell governor with the help of neat diagram. (CO-6)

Q.36 Draw the displacement diagram for a cam, rotating clockwise with simple harmonic motion to give a knife edge follower, at the end of a valve rod, motion describe below: (CO-7)

a) To raise the valve through 50 mm during 120° rotation of cam.

b) To keep the valve fully raised through next 30°.

c) To lower the valve during next 60°.

d) To keep the valve closed during rest of the revolution.

Note : Course outcome (CO) mentioned in the question paper is for official purpose only.

Q.30 Explain potentiometer. (CO-3)

Q.31 Classify cutting tool used in CNC machines. (CO-2)

Q.32 Explain tool compensation. (CO-4)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 What are the main problems in mechanical are electrical components of CNC machines. (CO-5)

Q.34 Explain FMS with advantages and limitations. (CO-6)

Q.35 Explain working of CNC system in detail. (CO-1)

Q.36 Explain different types of slide ways used in CNC machines in the detail. (CO-2)

(**Note:** Course outcome/CO is for office use only)

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181755/171755/ 121755/031755

5th Sem. / Mechanical / Mechatronics / Prod. (T & D) / Fabrication / Auto

Subject : CNC M/C & Automation

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objectives questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

Q.1 DNC stands for _____ (CO-1)

Q.2 Full form of ATC is _____. (CO-2)

Q.3 Functions of slide ways. (CO-2)

Q.4 Write the functions of tachometer. (CO-3)

Q.5 Full form of CIM. (CO-6)

Q.6 Name the types of encoder. (CO-3)

Q.7 Name the various input devices of CNC Machines. (CO-1)

Q.8 Write two types of control system. (CO-3)

Q.9 G90 stands for _____. (CO-4)

Q.10 Write two limitations of CNC machines. (CO-1)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts 10x2=20

Q.11 Define law of Robotics. (CO-6)

Q.12 Define binary coding. (CO-1)

Q.13 Name different motions of robots. (CO-6)

Q.14 Define feedback control system. (CO-3)

Q.15 Define automation. (CO-6)

Q.16 Name part programming format. (CO-4)

Q.17 Define tool magazine. (CO-2)

Q.18 Name different types of transducer. (CO-3)

Q.19 Define LVDT. (CO-3)

Q.20 Define machine zero. (CO-4)

Q.21 Define Do loop. (CO-4)

Q.22 Name types of control loops. (CO-3)

SECTION-C

Note: Short answer type questions. Attempt any five questions. 5x8=40

Q.23 What are different types of robotic motion. (CO-6)

Q.24 Differentiate between NC and CNC system. (CO-1)

Q.25 Explain cutter radius compensation. (CO-4)

Q.26 Write a short note on online fault finding techniques. (CO-5)

Q.27 Different the terms of do loop and mirror image. (CO-4)

Q.28 Differentiate between encoder and decoder. (CO-3)

Q.29 Explain servo motor. (CO-3)

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181756/171756

5th Sem. / Mechanical Engg.

Subject : Machine Design

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Objectives questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

Q.1 Write types of machine design. (CO-1)

Q.2 What is standard? (CO-2)

Q.3 What is angle between the principal planes. (CO-4)

Q.4 Define equivalent twisting moment. (CO-3)

Q.5 Define equivalent bending moment. (CO-5)

Q.6 What is the material of key? (CO-6)

Q.7 Define flank of thread. (CO-1)

Q.8 What is function of knuckle joint? (CO-6)

Q.9 What are uses of rivets? (CO-6)

Q.10 Classify couplings? (CO-6)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts 10x2=20

Q.11 Write the factors which affects factor of safety. (CO-1)

Q.12 Explain briefly stress concentration. (CO-3)

Q.13 State maximum principal or normal stress theory. (CO-4)

Q.14 Name various type of loads on shaft. (CO-3)

Q.15 What is the effect of keyway on the strength of shaft? (CO-6)

Q.16 Explain ACME thread with the help of neat sketch. (CO-6)

Q.17 Define dead load and live load. (CO-1)

Q.18 What is the function of Gib in cotter joint? (CO-6)

Q.19 List various applications of knuckle joint. (CO-6)

Q.20 What is the Unwin's formula in case of river? (CO-5)

Q.21 Define efficiency of riveted joint. (CO-6)

Q.22 Write functions of flexible coupling. (CO-6)

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.23 What is machine design? What are its different types? Explain. (CO-1)

Q.24 (a) What are different method to reduce stress concentration? Explain. (CO-1)

b) Explain maximum shear stress theory. (CO-4)

Q.25 a) Define strength of riveted joints. (CO-6)

b) Which materials are generally prefers for making a shaft? Enlist the important properties of material should have. (CO-6)

Q.26 A solid steel circular shaft have tensile stress and ultimate shear stress of 800 MPa and 620 MPa respectively, is subjected to combine torsion moment of 130000 Nm and bending moment of 4000 Nm. Assume FOS=5, find diameter of shaft. (CO-5)

SECTION-D

Note: Long answer type questions. Attempt any two questions. 2x20=40

Q.27 Design a Knuckle joint to transmit a load of 100 KN. The permissible stress for the joint material in tension shear and crushing are (CO-6)

Tensile stress = 75 N/ mm^2

Shear stress = 60 N/mm^2

Crushing stress = 150 N/mm^2

Q.28 a) Give the Nomenclature of screw thread with neat sketch. (CO-1)

b) What are requirement of a good shaft coupling. (CO-1)

Q.29 Design a CI flange coupling to connect two shaft 100mm diameter running at 250r.p.m for transmitting 4000 N-m torque. Take permissible shear stress for shaft, Bolt and Key as 50 MN/m^2 and shear stress for CI as 08 MN/m^2. (CO-6)

(**Note:** Course outcome/CO is for office use only)