DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

UNIVERSITY INSTITUTE OF ENGINEERING AND TECHNOLOGY, CSJM UNIVERSITY, KANPUR

(Subject Name: Basic Electrical & Electronics Engineering)
(Subject Code: ESC-S101) [Branch: CSAI]

Semester: 2022-23 (Odd Semester) **Year: 1st Year (2K23)**

Second mid Semester Examination October - 2023

Time: 1.5 h **Maximum marks: 30**

All questions are compulsory

Section A

Note: 9 marks (9 questions of 1 mark each)

1. Define Power Factor?
2. What is the difference between active power and reactive power?
3. Define resonance frequency.
4. Define Bandwidth and quality factor?
5. Define frequency and time period of alternative quantity?
6. Explain peak Factor and Form Factor?
7. Define Iron losses and Copper losses in single phase transformer?
8. Write EMF Equation of single phase transformer.
9. Explain Instantaneous value of alternative quantity.

Section B

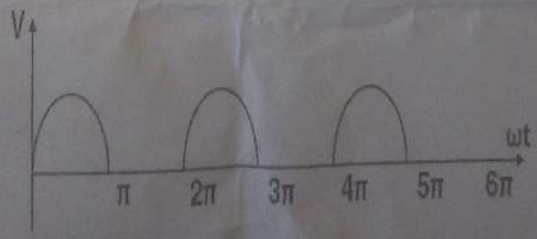
Note: 9 marks (3 questions of 3 marks each)

1. Explain the disadvantages of low power factor?
2. Write short note on Active, Reactive and Apparent Power.
3. Define Efficiency of single phase transformer. Derive the condition for maximum efficiency of single phase transformer?

Section C

Note: 12 marks (2 questions of 6 marks each)

1. Draw and explain the circuit diagram and phasor diagram of R-L-C series circuit. Also derive t expression of resonance frequency?
2. Determine the RMS Value, Average Value, Form Factor and Peak Factor of the voltage waveform shown in below Figure.



DEPARTMENT OF CSE-AI

UNIVERSITY INSTITUTE OF ENGINEERING AND TECHNOLOGY, C.S.J.M. UNIVERSITY, KANPUR.

B.Tech., Physics-I (PHY-S101)

Semester: 2023-24 (Odd Semester) **Year: 1st Year (2k23)**

Second Mid Semester Examination

Time: 1.5 h **Maximum marks: 20**

Note: All questions are compulsory.

Section A [8 x 1 = 8]

1. Define conservative force?
2. Give an expression for work energy theorem.
3. What do you mean by inelastic collision?
4. What is center of mass frame of reference?
5. Write down the differential equation for the motion of simple pendulum.
6. What is two stage rocket?
7. Give working principle of a rocket?
8. What is the conservation law of angular momentum?

Section B [3 x 2 = 6]

9. A particle of mass m kg lies in a potential field given by $V = 200\,x^2 + 300$ J/kg. Find the frequency and time period.
10. If the center of mass of three particles of masses 1, 2 and 3 gm be at the point (1,1,2) then where should a fourth particle of mass 5 gm be placed so that the combined center of mass be at (0,0,0)?
11. Show that the relative velocity between the particles after an elastic head on collision is equal and opposite to the relative velocity before the collision.

Section C [2 x 3 = 6]

12. Show that for a harmonic oscillator, mechanical energy remains constant and it is proportional to square of amplitude. Plot a graph also.
13. Deduce the expression for the final velocity of a rocket.

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DEPARTMENT OF MECHANICAL ENGINEERING
UNIVERSITY INSTITUTE OF ENGINEERINGAND TECHNOLOGY, CSJM UNIVERSITY, KANPUR

Subject Name-WORKSHOP CONCEPT (TCA-S 102) CS-AI

Semester: (Even Semester)

Mid Semester-2 Examination

Time: 1.5 h **Maximum marks: 30**

Section A (9 questions of 1 mark each)

1	**Follow board pattern are used to cast** (a)Structurally weak portions (b)Large axi-symmetric or prismatic shapes (c)Product having protruding sections (d)Bell shape or cylindrical shape products
2	**The sand in its natural or moist state is called as** a. green sand b. loam sand c. dry sand d. none of the above
3	**The hot chamber die casting method is used to cast.....** a. Brass b. Magnesium c. Aluminium d. Alloys of lead, tin, and zinc
4	**Which of the following casting methods utilises wax pattern.....** a. Shell moulding b. Plaster moulding c. Slush casting d. Investment casting
5	**In centrifugal castings,the impurities are.....** a. Uniformly distributed b. Collected in the centre of casting c. Forced outside the surface d. Present in the middle section of casting
6	**In centrifugal casting, cores are made of.....** a. Steel b. Cast iron c. Hard sand d. None of the above
7	**Which property of a material is used for Casting it into a desired shape** (a)Strength (b)Fluidity (c)Ductility (d)Formability
8	**What is the reason for using unconventional or advanced machining processes?** **a.** Complex surfaces **b.** High accuracy and surface finish **c.** High strength alloys **d.** All of the above
9	**The ability of the moulding sand to withstand the heat of melt without showing any sign of softening is called as** a. strength or cohesiveness b. refractiveness c. collapsibility d. adhesiveness

Section B (3 questions of 3 marks each)

Q 1. Explain properties of moulding sand.
Q 2. Define (i) hardness (ii) strength (iii) toughness
Q 3. Write down five differences between conventional and unconventional machining process.

Section C 12 marks (6 marks each)

Q 4. Discuss electron beam machining with neat and clean figure.
Q 5. Explain all types of defects develop during casting process.

UNIVERSITY INSTITUTE OF ENGINEERING AND TECHNOLOGY,

CSJM UNIVERSITY, KANPUR

ENGG. CHEMISTRY (CHM-S101) (CSAI)

Semester: I (Odd Semester) **Year: 1st Year (2K23)**

Second Mid. Semester Examination-2023-24

Time: 1.5 h **Max. Marks: 30**

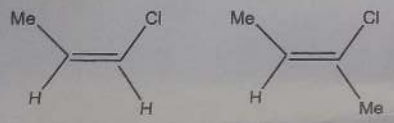
Note: All questions are compulsory

Section A

(1x 9 = 9)

1. Anisole has ----------. (+M/-M effect)

2. The compounds, given below are ----------. (trans and cis/cis and trans)



3. Ethyl carbocation is more stable than benzyl carbocation. (true/false)

4. What is the multiplicity of triplet carbine?

a. 2 b. 3

c. 4 d. 5

5. What is inductive effect?

6. Addition of singlet carbine is stereospecific in nature whereas triplet carbine is non-stereospecific in nature. (true/false)

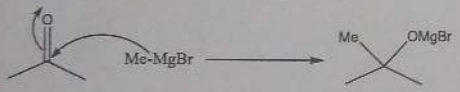
7. Geometry of carbanion is ----------. (tetrahedral/pyramidal)

8. The conformer (A) is known as,

A

a. Skew form b. Anti-staggered c. Eclipse form d. Staggered form

9. This reaction is an example of,

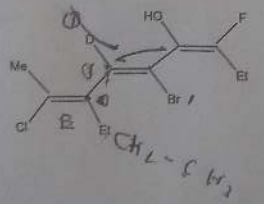


a. +E effect
b. +M effect
b. –E effect
d. –M effect

Section B

(3x3 = 9)

1. Explain optical isomerism, enantiomers and diastereomers with suitable examples.
2. Assign E and Z configuration of the following compound.



3. Plot a graph between PE versus different angles of conformers of n-butane.

Section C

(2x 6=12)

1. Explain Markovni and Anti –Markovni kov's rules with suitable examples.
2. Discuss about nucleophilic aromatic substitution reaction.

Semester: 23-24 (Odd Semester) Year: 1 year (2K23)

Maximum marks: 30 Time : 90 min.

2nd
~~First~~ MID SEMSTER EXAMINATION

SECTION- A

Attempt all question

Question 1

a. $\int_0^1 \int_0^x f(x,y)dydx = \cdots$

b. *If* a circle is positive quadrant is rotated about the y-axis find the volume generated.

c. What does the formula of the triple integral $\iiint_T dxdydz$.

d. Find the value of $\Gamma(-\frac{3}{2})$.

e. Evaluate $\int_0^{\pi/2} sin^{10}xdx$.

f. If $u = \frac{x^2+y^2+xy}{x+y}$, then find the value of $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$=..

g. Find the point for maximum value of the function $x^3y^2(1-x-y)$.

h. $\lim_{\substack{x\to 0 \\ y\to 0}} \frac{xy+2}{x^2+y^2} = \cdots$.

i. Write the definition of the continuity function of two variables.

SECTION- B 3*3

Question 2. Find the volume bounded by the xy-plan, the parboloid $2z = x^2 + y^2$ and the cylinder $x^2 + y^2 = 4$.

Question 3. State and proof Dirichlet's Integral.

Question 4. Show that the function $f(x,y) = x^3 + y^3 - 63(x+y) + 12xy$.

SECTION C 4*3=12.

Question 5. **(a)** Evaluate $\iiint \sqrt{x^2+y^2}dxdydz$ over the volume bounded by the right circular cone $x^2 + y^2 = z^2, z > 0$ and the planes $z = 0$ *and* $z = 1$.

(b) Find the volume of the tetrahedron bounded by the planes $x = 0, y = 0, z = 0, x + y + z = a$.

Question 6. **(a)** Given $u = x^2 - y^2, v = 2xy$, calculate $\frac{\partial(x,y)}{\partial(u,v)}$.

(b) Expand $z = e^{2x}cox3y$ in power series of x and y upto quad