

250011/220011/210011

250011/220011/210011

1st Sem / Agri/ Architectural assitansthip / Automobile / Ceramic / Chemical / Chem P & P/ Civil/ Commputer/ Electrical / ECE/ Food Technology / Instrumentation & Control engg./ LIS/ Mechanical / Mechanical (Tool & Die esign)/ DMLT/ Plastic Technology / Textile Design / Textile Processing / Text. Tech./ Automation & Robotics / Fashion Technology/ OMCA/ Fash. Desn/. Medical electronics/ Fin., Acc. & Aud./ Business Management Artificial Intelligence & Machine Learning / Hotel Management & Catering Technology / Arch. (For Speech and Hearing Impaired) / Computer (For Speech and Hearing Impaired) / ECE (For Speech and Hearing Impaired)/ DMLT (For Speech and Hearing Impaired), Aeronautical Engg., Fire Tech. & Safety

**Subject : English and Communication skills-I /
English & Communication skills**

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory
(6x1=6)

Q.1 Skimming is a technique of _____

a) Reading b) Listening
c) Writing d) Speaking

Q.2 Intensive Reading is more focused on _____

a) Reading more
b) Reading less
c) Vocabulary
d) Reading slowly and carefully

- Q.3 Non-verbal Communication means
- a) Using words by mouth (i.e., speaking)
 - b) Using written words
 - c) No use of words at all
 - d) None of the above
- Q.4 Posture is an example of _____
- a) Verbal Communication
 - b) Non-verbal Communication
 - c) Informal Communication
 - d) None of the above
- Q.5 The is a/an _____
- a) Noun
 - b) Definite article
 - c) Indefinite article
 - d) Pronoun
- Q.6 'Sub.' abbreviation in a letter is used for _____
- a) Subway
 - b) Subtitle
 - c) Subject
 - d) Subordinate

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

At the end of the day a police van stopped at the door before the house. It was still raining and the streets were all flooded. Two constables brought out Phatik in their arms and placed him before Bishamber. He was wet through from head to foot, muddy all over, his face and eyes flushed red with fever, and his limbs all trembling. Bishamber carried him in his arms, and took him into the inner apartments. When his wife saw him, she exclaimed: "What a heap of trouble this boy has given us. Hadn't you better send him home?"

Phatik heard her words, and sobbed out loud: "Uncle, I was just going home; but they dragged me back again." The fever rose very high, and all that night the boy was delirious. Bishamber brought in a doctor. Phatik opened his eyes flushed with fever,

and looked up to the ceiling, and said vacantly: "Uncle, have the holidays come yet? May I go home?"

Bishamber wiped the tears from his own eyes, and took Phatik's lean and burning hands in his own, and sat by him through the night. The boy began again to mutter. At last his voice became excited: "Mother," he cried, "don't beat me like that! Mother! I am telling the truth!"

The next day Phatik became conscious for a short time. He turned his eyes about the room. as if expecting someone to come. At last, with an air of disappointment, his head sank back on the pillow. He turned his face to the wall with a deep sigh.

Q.7 Why did the police come to Bishamber's house?

Q.8 Write the synonym of the following words; Constables, lean.

Q.9 For whom Phatik was waiting even in his fever?

Q.10 What were the repeated words of Phatik?

Q.11 What was the reaction of his aunt when Phatik was brought back?

Q.12 Why did Phatik want to flee?

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Fill in the blanks with suitable pronouns:

a) Amit is a very good friend of _____.

b) We are giving Anju a surprise party on _____ birthday.

c) _____ has not rained since last Monday.

d) Why don't _____ quit smoking?

Q.14 What is feedback? How is it important?

Q.15 Differentiate between oral and written communication.

- Q.16 What do you understand by the term netiquettes? Explain.
- Q.17 What do we learn from Dr. Abdul Kalam's life sketch?
- Q.18 How does Narayan Murthy compare the concept of dignity of labour in western and Indian society?
- Q.19 Describe Rabindranath Tagore's intention behind writing the story Homecoming.
- Q.20 Sir M. Visvesvaraya is an example of tireless hard-work for and dedication to a public cause. Write a short note on it based on your reading.
- Q.21 Fill in the blanks with suitable form of the verb given in the brackets.
- a) We _____ for home on the occasion of Diwali. (leave)
 - b) There _____ no use of crying over split milk. (be)
 - c) Did you _____ Agra during the last summer vacations? (visit)
 - d) Sania often _____ home late. (return)
- Q.22 Draft notice informing the employees about the change in the timings of office.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the communication process along with flow diagram.
- Q.24 Write a letter to the SDO, Electricity Board UHBVN for poor street light in your locality.
- Q.25 Write a letter to the manager of the company you have already applied for asking him/her about the documents required for the interview.

No. of Printed Pages : 8
Roll No.

250012/220012/210012/200012/
170012/120012/060032/030012

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Subject : Applied Mathematics / Applied Mathematics-I

Time : 3 Hrs.

M.M. : 60

Section-A

Note: Multiple Choice questions. All questions are compulsory. (6x1=6)

Q.1 The point $(-2, -5)$ lies in the Quadrant

- | | |
|-----------|------------|
| (a) First | (b) Second |
| (c) Third | (d) Fourth |

Q.2 How to write infinity in MATLAB?

- | | |
|---------------|-------------------|
| (a) Inf | (b) Infinity |
| (c) Undefined | (d) None of these |

Q.3 Conjugate of $(1+i)$ is

- | | |
|--------------|--------------|
| (a) $(-1+i)$ | (b) $(1-i)$ |
| (c) $(1+i)$ | (d) $(-1-i)$ |

(1) 250012/220012/210012/200012/
170012/120012/060032/030012

Q.4 The number of items in expansion of $(x+y)^5$ is

- (a) 5 (b) 7
(c) 9 (d) 6

Q.5 The degree measure of $\left(\frac{\pi}{2}\right)^\circ$ is

- (a) 60° (b) 90°
(c) 45° (d) 30°

Q.6 Two matrices A $m \times n$ and B $p \times q$ can be multiplied only

- (a) $m=p$ (b) $n=p$
(c) $m=q$ (d) $n=q$

Section-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Evaluate i^{30}

Q.8 Find the value of $\sin 30^\circ$

Q.9 $[5, 3, 8]$ is an example of _____ matrix.

Q.10 Find the mid point of A(4, 6) and B(8, 3)

Q.11 Evaluate $\begin{vmatrix} 4 & 5 \\ 3 & -2 \end{vmatrix}$

Q.12 The Logarithmic form of $5^3=125$

(2) 250012/220012/210012/200012/
170012/120012/060032/030012

Section-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. $(8 \times 4 = 32)$

Q.13 Find the equation of straight line which passing through the following pair of point $(15, -5)$ $(4, -9)$

Q.14 Find the value of x if

$$\log(3x^2 + 8) = \log 3x + \log(x + 8)$$

Q.15 Find the modulus and amplitude of $5\sqrt{6} + 3i$

Q.16 Expand $(x + 2y)^4$ using binomial theorem

Q.17 Express the following as product $\sin 8x + \sin 4x$

Q.18 If $A = \begin{bmatrix} 7 & 3 \\ 2 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 7 \\ 4 & 5 \end{bmatrix}$ then find $4A + 2B$

Q.19 Find the centre and radius of given equation of circle $x^2 + y^2 - 3x + 2y + 6 = 0$

Q.20 Evaluate $\frac{\sin 60^\circ}{\cos 30^\circ}$

Q.21 Vertices of triangle are $(4, 3)$, $(6, 2)$ and $(7, 5)$ find the centroid of the triangle.

Q.22 Write four advantages of Science lab.

Section-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Prove that

$$\tan 13A - \tan 9A - \tan 4A = \tan 13A \tan 9A \tan 4A$$

Q.24 Find the equation of circle which passes through the following three points.

(2, 0), (6, 4) and (3, 4)

Q.25 (a) Solve by Cramer's rule

$$5x + 3y = 8$$

$$7x - 3y = 4$$

(b) Write $\frac{2+i}{3-i}$ in the $a+ib$ form

No. of Printed Pages : 8
Roll No.

250012/220012/210012/200012/
170012/120012/060032/030012

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Subject : Applied Mathematics-I / Applied Mathematics

Time : 3 Hrs.

M.M. : 60

खण्ड - क

नोट: बहुविकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 बिंदु $(-2, -5)$ किस चतुर्थांश में स्थित है?

(क) प्रथम

(ख) द्वितीय

(ग) तृतीय

(घ) चतुर्थ

प्र.2 MATLAB में अनंत (infinity) को कैसे लिखा जाता है?

(क) Inf

(ख) इनफिनिटी

(ग) अनडिफाईंड

(घ) इनमें से कोई नहीं

प्र.3 $(1+i)$ का संयुग्म है:

(क) $(-1+i)$

(ख) $(1-i)$

(ग) $(1+i)$

(घ) $(-1-i)$

(5) 250012/220012/210012/200012/
170012/120012/060032/030012

प्र.4 $(x+y)^5$ के विस्तार में पदों की संख्या होती है:

(क) 5

(ख) 7

(ग) 9

(घ) 6

प्र.5 $\left(\frac{\pi}{2}\right)^\circ$ का डिग्री मान है:

(क) 60°

(ख) 90°

(ग) 45°

(घ) 30°

प्र.6 दो मैट्रिक्स A $m \times n$ और B $p \times q$ का गुणन तभी संभव है जब:

(क) $m=p$

(ख) $n=p$

(ग) $m=q$

(घ) $n=q$

खण्ड - ख

नोट: वस्तुनिष्ठ/रिक्त स्थान पूर्ति प्रकार के प्रश्ना सभी प्रश्न अनिवार्य हैं।
(6x1=6)

प्र.7 i^{30} का मान ज्ञात कीजिए।

प्र.8 $\sin 30^\circ$ का मान ज्ञात कीजिए।

प्र.9 $[5, 3, 8]$ _____ आव्यूह का उदाहरण है।

प्र.10 बिंदु A(4, 6) और B(8, 3) का मध्य बिंदु ज्ञात कीजिए।

प्र.11 $\begin{vmatrix} 4 & 5 \\ 3 & -2 \end{vmatrix}$ का मान ज्ञात कीजिए।

250012/220012/210012/200012/
(6) 170012/120012/060032/030012

प्र.12 $5^3=125$ का लघुगणकीय रूप लिखिए।

खण्ड - ग

नोट: लघु उत्तरीय प्रश्ना दस में से कोई आठ प्रश्न हल करें। (8x4=32)

प्र.13 उन बिंदुओं (15, -5) और (4, -9) से गुजरने वाली सीधी रेखा का समीकरण ज्ञात कीजिए।

प्र.14 यदि $\log (3x^2+8) = \log 3x + \log (x+8)$ तो x का मान ज्ञात कीजिए।

प्र.15 $5\sqrt{6+3i}$ का मापांक और आयाम ज्ञात कीजिए।

प्र.16 द्विपद प्रमेय का उपयोग करके $(x+2y)^4$ का विस्तार कीजिए।

प्र.17 $\sin 8x + \sin 4x$ को गुणनफल के रूप में व्यक्त कीजिए।

प्र.18 यदि $A = \begin{bmatrix} 7 & 3 \\ 2 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 7 \\ 4 & 5 \end{bmatrix}$ तो $4A + 2B$ ज्ञात कीजिए।

प्र.19 वृत्त $x^2+y^2-3x+2y+6=0$ का केंद्र और त्रिज्या ज्ञात कीजिए।

प्र.20 $\frac{\sin 60^\circ}{\cos 30^\circ}$ का मान ज्ञात कीजिए।

प्र.21 त्रिभुज के शीर्ष (4, 3), (6, 2) और (7, 5) हैं। इसका केंद्रक ज्ञात कीजिए।

प्र.22 साइंस लैब के चार लाभ लिखिए।

खण्ड - घ

नोट: दीर्घ उत्तरीय प्रश्न। तीन में से कोई दो प्रश्न हल करें। (2x8=16)

प्र.23 सिद्ध कीजिए कि:

$$\tan 13A - \tan 9A - \tan 4A = \tan 13A \tan 9A \tan 4A$$

प्र.24 उन तीन बिंदुओं (2, 0), (6, 4) और (3, 4) से गुजरने वाले वृत्त का समीकरण ज्ञात कीजिए।

प्र.25 (क) क्रैमर के नियम से हल कीजिए:

$$5x + 3y = 8$$

$$7x - 3y = 4$$

(ख) $\frac{2+i}{3-i}$ को $a + ib$ के रूप में लिखिए।

No. of Printed Pages : 8

250013/220013/210013

Roll No.

/200013/170013/120013

/060033/030813/030013

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Metallurgy, Foundary & Forging, Brick Tech, Construction,
Packaging, Printing, AME, Aeronautical Engg., Fire Tech. & Safety

Subject : Applied Physics- I / Applied Physics

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The dimensional formula of torque is. (CO1)

a) $M^1 L^1 T^{-2}$

b) $M^1 L^2 T^{-2}$

c) $M^0 L^1 T^{-2}$

d) $M^1 L^{-1} T^{-2}$

Q.2 Linear momentum is defined as. (CO2)

a) $\vec{p} = m \vec{v}$

b) $\vec{p} = \vec{m} \vec{v}$

c) $\vec{p} = m^2 \vec{v}$

d) $\vec{p} = m v^2$

(1) 250013/220013/210013

/200013/170013/120013

/060033/030813/030013

- Q.3 A bow stores energy in the form of (CO3)
- a) Potential energy b) Internal energy
- c) Kinetic energy d) None of the above
- Q.4 Which of the following is not a state of matter?
- a) Solid b) Liquid (CO4)
- c) Gas d) Energy
- Q.5 What is unit of mass? (CO1)
- a) Litter b) Meter
- c) Kilogram d) Second
- Q.6 The boiling point of water in celsius is (CO5)
- a) 0°C b) 32°C
- c) 100°C d) 212°C

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Write down SI unit of power and energy. (CO1)
- Q.8 Define negative work. (CO3)
- Q.9 Define rotational motion. (CO2)

(2) 250013/220013/210013
/200013/170013/120013
/060033/030813/030013

- Q.10 Define restoring force. (CO4)
- Q.11 Define Fahrenheit scale of temperature measurement. (CO5)
- Q.12 Define co-initial vectors. (CO2)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Write importance of friction in daily life. (CO3)
- Q.14 Define linear velocity and angular velocity. Establish the relationship between them. (CO2)
- Q.15 Define elasticity, stress, strain and Hooke's law. (CO2)
- Q.16 Write down advantages of SI system of units. (CO1)
- Q.17 Define angular momentum and moment of inertia. Give the physical significance of moment of inertia. (CO2)
- Q.18 Define surface tension and give its formula. Write down its SI unit. (CO4)
- Q.19 Explain the working of mercury thermometer. (CO5)

(3) 250013/220013/210013
/200013/170013/120013
/060033/030813/030013

- Q.20 Explain recoil velocity of a gun. A bullet of mass 25 gram is fired from a gun of mass 5 kg with a speed 500 m/s. Calculate the recoil velocity of the gun. (CO4)
- Q.21 Define atmospheric pressure, gauge pressure and absolute pressure. (CO4)
- Q.22 Covert 100 newton of force in to dynes? (CO1)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 a) Differentiate b/w Scalar and vector quantity?
b) Check the accuracy of equation $v=u+at$ by using dimensional analysis.(4) (CO1)
- Q.24 Define centripetal force. Explain its application in the banking of roads. (CO2)
- Q.25 Derive the expression for conservation of mechanical energy of a freely falling body. (CO3)

No. of Printed Pages : 8

250013/220013/210013

Roll No.

/200013/170013/120013

/060033/030813/030013

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Subject : Applied Physics-I / Applied Physics

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भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 टॉर्क का विमीय सूत्र है: (CO1)

क) $M^1 L^1 T^{-2}$

ख) $M^1 L^2 T^{-2}$

ग) $M^0 L^1 T^{-2}$

घ) $M^1 L^{-1} T^{-2}$

प्र.2 रैखिक संवेग की परिभाषा है: (CO2)

क) $\vec{p} = m \vec{v}$

ख) $\vec{p} = \vec{m} \vec{v}$

ग) $\vec{p} = m^2 \vec{v}$

घ) $\vec{p} = m v^2$

(5) 250013/220013/210013

/200013/170013/120013

/060033/030813/030013

- प्र.3 धनुष ऊर्जा किस रूप में संचित करता है: (CO3)
- क) स्थितिज ऊर्जा ख) आंतरिक ऊर्जा
- ग) गतिज ऊर्जा घ) इनमें से कोई नहीं
- प्र.4 निम्न में से कौन-सी पदार्थ की अवस्था नहीं है? (CO4)
- क) ठोस ख) द्रव
- ग) गैस घ) ऊर्जा
- प्र.5 द्रव्यमान की इकाई क्या है? (CO1)
- क) लीटर ख) मीटर
- ग) किलोग्राम घ) सेकंड
- प्र.6 सेल्सियस में पानी का क्वथनांक है: (CO5)
- क) 0°C ख) 32°C
- ग) 100°C घ) 212°C

भाग - ख

- नोट:- वस्तुनिष्ठ प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)
- प्र.7 शक्ति और ऊर्जा की SI इकाइयाँ लिखिए। (CO1)
- प्र.8 ऋणात्मक कार्य की परिभाषा दीजिए। (CO3)
- प्र.9 घूर्णन गति को परिभाषित कीजिए। (CO2)

(6) 250013/220013/210013
/200013/170013/120013
/060033/030813/030013

- प्र.10 पुनर्स्थापना बल को परिभाषित कीजिए। (CO4)
- प्र.11 तापमान मापन की फारेनहाइट पैमाने को परिभाषित कीजिए। (CO5)
- प्र.12 सह-आरंभिक सदिश को परिभाषित कीजिए। (CO2)

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। 10 में से किन्हीं 8 प्रश्नों को हल कीजिए।
(8x4=32)

- प्र.13 दैनिक जीवन में घर्षण का महत्व लिखिए। (CO3)
- प्र.14 रैखिक वेग और कोणीय वेग को परिभाषित कीजिए तथा उनके बीच संबंध स्थापित कीजिए। (CO2)
- प्र.15 प्रत्यास्थता, तनाव, विकृति तथा हुक के नियम को परिभाषित कीजिए। (CO2)
- प्र.16 SI इकाई प्रणाली के लाभों को लिखिए। (CO1)
- प्र.17 कोणीय संवेग और जड़त्व आघूर्ण को परिभाषित कीजिए। जड़त्व आघूर्ण का भौतिक महत्व बताइए। (CO2)
- प्र.18 पृष्ठ तनाव को परिभाषित कीजिए तथा उसका सूत्र लिखिए। इसकी SI इकाई भी लिखिए। (CO4)
- प्र.19 पारा थर्मामीटर की कार्यप्रणाली समझाइए। (CO5)

- प्र.20 बंदूक की प्रत्यागमन वेग को समझाइए। 25 ग्राम द्रव्यमान की गोली 5 kg द्रव्यमान की बंदूक से 500 m/s की गति से चलाई जाती है। बंदूक का प्रत्यागमन वेग ज्ञात कीजिए। (CO4)
- प्र.21 वायुमंडलीय दाब, गेज दाब और परम दाब को परिभाषित कीजिए। (CO4)
- प्र.22 100 न्यूटन बल को डाइन में परिवर्तित कीजिए। (CO1)

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन में से किन्हीं दो प्रश्नों को हल कीजिए। (2x8=16)

- प्र.23 क) अदिश और सदिश राशियों में अंतर बताइए।
ख) विमीय विश्लेषण द्वारा समीकरण $v=u+at$ की शुद्धता जाँचिए। (CO1)
- प्र.24 अभिकेंद्रीय बल को परिभाषित कीजिए। सड़कों के बैंकिंग (ढलान) में इसके अनुप्रयोग को समझाइए। (CO2)
- प्र.25 मुक्तपतन करते हुए पिंड के यांत्रिक ऊर्जा संरक्षण का समीकरण व्युत्पन्न कीजिए। (CO3)

No. of Printed Pages : 4

250015/220015/200015

Roll No.

/170015/120015/060035

/030015

**1st Sem / Agri/ Automobile / Ceramic/ Civil/ Electrical/
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(Tool & die Design) / Plastic Technology / Automation &
Robotics / Medical electronics, Arch, CAD/CAM, Chem,
P&P, CNC, Comp, ECE, EI, Food Tech, GE, IT, Mechatronics,
AME, Aeronautical Engg., Fire Tech. & Safety**

**Subject : Engineering Graphics /
Engineering Drawing - I**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Size of B1 drawing board is given as. (CO1)

- a) 1000 x 700
- b) 700 x 500
- c) 700 x 700
- d) None of above

Q.2 A parabola can be drawn by (CO1)

- a) Concentric Circles method
- b) rectangle method
- c) Tangent method
- d) Both (b) and (c)

Q.3 To show front view and top view on drawing sheet, generally H.P is rotated at an angle of (CO2)

- a) 45°
- b) 30°
- c) 60°
- d) 90°

(1) 250015/220015/200015

/170015/120015/060035

/030015

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Draw a parabola with whose base is 100mm and axis is 60 mm. (CO1)
- Q.14 What is scale? Explain the different types of scale. (CO1)
- Q.15 Draw the development of a cylinder with diameter 30 mm & height 60mm. (CO3)
- Q.16 A point P is 40mm in front of V.P and 50 mm above H.P Draw its projections. (CO2)
- Q.17 Draw any four symbols used in Electrical engineering. (CO1)
- Q.18 Write the difference between first angle projection and third angle projection. (CO2)
- Q.19 Differentiate between isometric and orthographic projections. (CO5)
- Q.20 A line AB 30 mm long is perpendicular to H.P End point B is in the H.P. and 15 mm from V.P. Draw its projection in third angle. (CO2)
- Q.21 What is the relation between isometric length and the true length of an object? (CO4)
- Q.22 Give the conventional representation of Lines given below (CO1)

i) Hidden Line

ii) Centre line

iii) Telegraph line

iv) Ditto line

(3) 250015/220015/200015
/170015/120015/060035
/030015

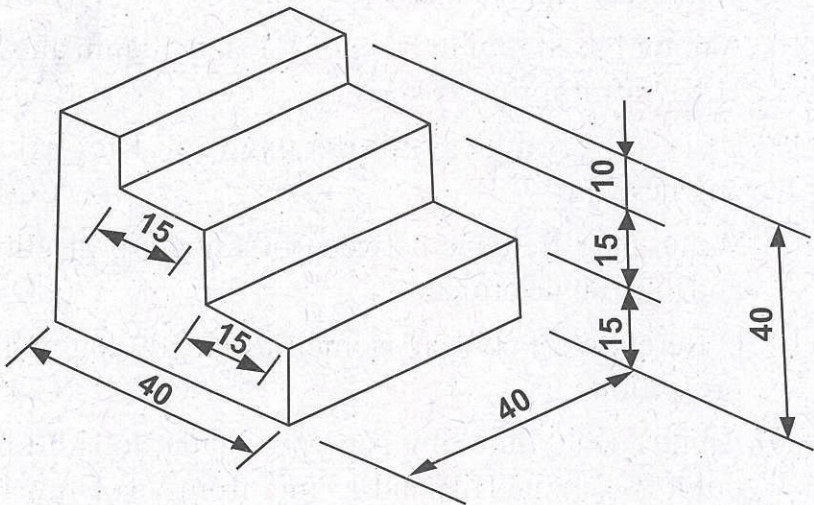
SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Draw in single stroke vertical lettering, the following sentence in the ratio of 7:4 and height of letters = 35 mm. (CO1)

CHASE YOUR GOALS

Q.24 Draw front elevation, side view and top view of a given block using First angle projection. (CO2)



- Dimension units may be taken in mm.
- Assume suitable dimensions if not specified or not visible clearly in the given figure.

Q.25 A cone of base 30 mm diameter and axis 50 mm long is resting on the H.P. The axis of the cone is perpendicular to the H.P and 42 mm in front of V.P. Draw its projection. (CO3)

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(4) 250015/220015/200015
/170015/120015/060035
/030015

No. of Printed Pages : 8
Roll No.

250016/220016

**1st Sem / Automobile / Mechanical/ Mechanical
(Tool & dieDesign)/ Advance Diploma in Tool and
Die Making /Textile Design / Textile Processing /
Text. Tech. / OMCA, Fire Tech. Safety**

Subject : Environmental Studies and Disaster

Time : 3 Hrs. **Management** M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 Full form of COD is
- a) Chemical Oxygen Demand
 - b) Clinical Ozone Depletion
 - c) Carbon Oxygen Demand
 - d) Clinical Oxygen Depletion
- Q.2 An Ecosystem includes
- a) Only plants
 - b) Only animals
 - c) Only microorganisms
 - d) Biotic and abiotic components

- Q.3 Which of the following is a natural disaster?
- a) Chemical explosion b) Earthquake
c) Nuclear accident d) Terrorist attack
- Q.4 Which of the following is a biotic component?
- a) Water b) Soil
c) Microorganism d) Minerals
- Q.5 Which of the following is NOT a renewable resource?
- a) Sunlight b) Wind energy
c) Geothermal energy d) Fossil fuels
- Q.6 The pH value of acid rain is _____.
- a) Less than 5.6 b) Between 5.6 to 7.0
c) 7.0 d) Greater than 7.0

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 What is unit of sound measurement?
- Q.8 Define Acid Rain.
- Q.9 Flood is a type of man-made disaster.(True/False)
- Q.10 The process of converting waste material into new material is called _____

- Q.11 Man-made disasters are caused by human activities.
(True/False)
- Q.12 Sustainable development means meeting present needs without harming future generations.
(True/False)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Define Global Warming. Enlist its adverse effects.
- Q.14 Define Deforestation. Give two causes.
- Q.15 What do you mean by natural disaster? Give two examples of natural disaster.
- Q.16 Write a short note on Solid Waste Management.
- Q.17 What are the effects of air pollution on human health.
- Q.18 Discuss the major sources of soil pollution with examples.
- Q.19 Differentiate between Renewable and Non-Renewable Resources of Energy with examples.
- Q.20 Explain disaster preparedness plan.
- Q.21 What are eco-friendly materials? Explain with examples.
- Q.22 Explain different methods of Rain Water Harvesting.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Write a short note on :

- a) Recycling
- b) Sustainable Development
- c) Ecology
- d) BOD

Q.24 Define noise pollution along with its effects. Write four methods for minimizing noise pollution.

Q.25 What do you mean by psychological response and management? Explain the concept of Trauma, Stress, Rumour.

No. of Printed Pages : 8
Roll No.

250016/220016

**1st Sem / Automobile / Mechanical/ Mechanical
(Tool & dieDesign)/ Advance Diploma in Tool and
Die Making /Textile Design / Textile Processing /
Text. Tech. / OMCA, Fire Tech. Safety**

**Subject : Environmental Studies and Disaster
Management**

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 COD का पूर्ण रूप क्या है?

- क) रासायनिक ऑक्सीजन मांग
- ख) क्लिनिकल ओजोन क्षय
- ग) कार्बन ऑक्सीजन मांग
- घ) क्लिनिकल ऑक्सीजन क्षय

प्र.2 एक पारितंत्र में शामिल होते हैं

- क) केवल पौधे
- ख) केवल जानवर
- ग) केवल सूक्ष्मजीव
- घ) जैविक एवं अजैविक घटक

(5)

250016/220016

प्र.3 निम्न में से कौन-सी प्राकृतिक आपदा है?

- क) रासायनिक विस्फोट ख) भूकंप
ग) परमाणु दुर्घटना घ) आतंकवादी हमला

प्र.4 निम्न में से कौन-सा जैविक घटक है?

- क) जल ख) मिट्टी
ग) सूक्ष्मजीव घ) खनिज

प्र.5 निम्न में से कौन-सा नवीकरणीय संसाधन नहीं है?

- क) सूर्य का प्रकाश ख) पवन ऊर्जा
ग) भू-तापीय ऊर्जा घ) जीवाश्म ईंधन

प्र.6 अम्ल वर्षा का pH मान _____ होता है।

- क) 5.6 से कम ख) 5.6 से 7.0 के बीच
ग) 7.0 घ) 7.0 से अधिक

भाग - ख

नोट:- वस्तुनिष्ठ / रिक्त स्थान पूर्ति प्रकार के प्रश्न। सभी प्रश्न अनिवार्य हैं।
(6x1=6)

प्र.7 ध्वनि मापन की इकाई क्या है?

प्र.8 अम्ल वर्षा को परिभाषित कीजिए।

प्र.9 बाढ़ मानव-निर्मित आपदा का एक प्रकार है। (सत्य / असत्य)

- प्र.10 अपशिष्ट पदार्थ को नए पदार्थ में परिवर्तित करने की प्रक्रिया को _____ कहा जाता है।
- प्र.11 मानव-निर्मित आपदाएँ मानव गतिविधियों के कारण होती हैं।
(सत्य / असत्य)
- प्र.12 सतत विकास का अर्थ वर्तमान आवश्यकताओं की पूर्ति करना है बिना भविष्य की पीढ़ियों को हानि पहुँचाए। (सत्य / असत्य)

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। दस प्रश्नों में से कोई आठ प्रश्न हल कीजिए।
(8x4=32)

- प्र.13 वैश्विक तापन को परिभाषित कीजिए। इसके दुष्प्रभावों का उल्लेख कीजिए।
- प्र.14 वनों की कटाई को परिभाषित कीजिए। इसके दो कारण बताइए।
- प्र.15 प्राकृतिक आपदा से आप क्या समझते हैं? प्राकृतिक आपदा के दो उदाहरण दीजिए।
- प्र.16 ठोस अपशिष्ट प्रबंधन पर संक्षिप्त टिप्पणी लिखिए।
- प्र.17 मानव स्वास्थ्य पर वायु प्रदूषण के प्रभाव क्या हैं?
- प्र.18 उदाहरण सहित मृदा प्रदूषण के प्रमुख स्रोतों की चर्चा कीजिए।
- प्र.19 ऊर्जा के नवीकरणीय एवं अनवीकरणीय संसाधनों में उदाहरण सहित अंतर बताइए।

- प्र.20 आपदा तैयारी योजना की व्याख्या कीजिए।
- प्र.21 पर्यावरण-अनुकूल सामग्री क्या हैं? उदाहरण सहित समझाइए।
- प्र.22 वर्षा जल संचयन की विभिन्न विधियों की व्याख्या कीजिए।

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन प्रश्नों में से कोई दो प्रश्न हल कीजिए।
(2x8=16)

प्र.23 निम्नलिखित पर संक्षिप्त टिप्पणी लिखिए :

- | | |
|-----------------|--------------|
| क) पुनर्चक्रण | ख) सतत विकास |
| ग) पारिस्थितिकी | घ) BOD |

प्र.24 ध्वनि प्रदूषण को इसके प्रभावों सहित परिभाषित कीजिए। ध्वनि प्रदूषण को कम करने की चार विधियाँ लिखिए।

प्र.25 मनोवैज्ञानिक प्रतिक्रिया एवं प्रबंधन से आप क्या समझते हैं? आघात, तनाव एवं अफवाह की अवधारणा समझाइए।

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Business Management / Artificial Intelligence & Machine
Learning / Hotel Management & Catering Technology /
Computer (For Speech and Hearing Impaired) /
ECE (For Speech and Hearing Impaired),
Aeronautical Engg.**

Subject : Fundamental of IT

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which is an example of system software (CO1)

- | | |
|----------------|---------------------|
| a) Compilers | b) Operating System |
| c) Interpreter | d) All of these |

Q.2 WWW stands for? (CO1)

- | | |
|-------------------|-------------------|
| a) World Wide Web | b) World wake web |
| c) Word wide web | d) None of these |

- Q.10 Who is the father of Computers? (CO1)
- Q.11 BIOS stands for _____. (CO2)
- Q.12 Cache memory is a very expensive memory.
(True/False) (CO2)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain the term computer memory and its types. (CO1)
- Q.14 Explain the term Hardware and software with examples. (CO2)
- Q.15 What is Google drive. List the features of G-Drive (CO3)
- Q.16 Name any four secondary storage devices (CO3)
- Q.17 Write an algorithm to find the sum of two numbers. (CO1)
- Q.18 Explain the steps involved in problem solving. (CO1)
- Q.19 List any four objectives of Digital India Portal. (CO1)
- Q.20 Explain various types of MS office tools. (CO4)

Q.21 Differentiate between volatile and non-volatile memory. (CO2)

Q.22 Write advantages and disadvantages of social media. (CO1)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Draw and explain Block Diagram of Computer. (CO1)

Q.24 Explain the different symbols used in a flowchart. (CO4)

Q.25 Write a short note on :

- a) Algorithm
- b) Google calendar
- c) Digital marketing
- d) Web Browser

No. of Printed Pages : 8

250017/220017

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Business Management / Artificial Intelligence & Machine
Learning / Hotel Management & Catering Technology /
Computer (For Speech and Hearing Impaired) /
ECE (For Speech and Hearing Impaired),
Aeronautical Engg.**

Subject : Fundamental of IT

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 निम्न में से सिस्टम सॉफ्टवेयर का उदाहरण कौन सा है?
(CO1)

क) कंपाइलर

ख) ऑपरेटिंग सिस्टम

ग) इंटरप्रेटर

घ) उपरोक्त सभी

(5)

250017/220017

प्र.2 WWW का पूर्ण रूप क्या है? (CO1)

- क) वर्ल्ड वाइड वेब ख) वर्ल्ड वेक वेब
ग) वर्ड वाइड वेब घ) इनमें से कोई नहीं

प्र.3 सूचना की सबसे छोटी इकाई क्या है? (CO4)

- क) बिट ख) बाइट
ग) निबल ग) किलोबाइट

प्र.4 कंप्यूटर के जनक कौन हैं? (CO1)

- क) जेम्स गॉसलिंग ख) चार्ल्स बैबेज
ग) डेनिस रिची घ) ब्जामे स्ट्रॉस्ट्रप

प्र.5 निम्न में से आउटपुट डिवाइस कौन सा है? (CO1)

- क) प्रिंटर ख) मदरबोर्ड
ग) कीबोर्ड घ) इनमें से कोई नहीं

प्र.6 जब कोई फाइल डिलीट की जाती है, तो वह कहाँ जाती है?

- क) माय डॉक्यूमेंट्स ख) स्टार्ट (CO4)
ग) माय कंप्यूटर घ) रीसायकल बिन

भाग - ख

नोट:- वस्तुनिष्ठ प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.7 सॉफ्टवेयर _____ का एक समूह है। (CO1)

प्र.8 HTTP का पूर्ण रूप लिखिए। (CO1)

प्र.9 वोलाटाइल मेमोरी का नाम बताइए। (CO2)

प्र.10 कंप्यूटर के जनक कौन हैं? (CO1)

प्र.11 BIOS का पूर्ण रूप _____ है। (CO2)

प्र.12 कैश मेमोरी एक बहुत महंगी मेमोरी है। (सही/गलत) (CO2)

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। 10 में से किन्हीं 8 प्रश्नों को हल कीजिए।
(8x4=32)

प्र.13 कंप्यूटर मेमोरी तथा उसके प्रकारों की व्याख्या कीजिए।
(CO1)

प्र.14 हार्डवेयर एवं सॉफ्टवेयर को उदाहरण सहित समझाइए।
(CO2)

प्र.15 गूगल ड्राइव क्या है? इसके फीचर्स लिखिए। (CO3)

प्र.16 किसी भी चार सेकेंडरी स्टोरेज डिवाइस के नाम लिखिए।
(CO3)

- प्र.17 दो संख्याओं का योग ज्ञात करने के लिए एल्गोरिथ्म लिखिए। (CO1)
- प्र.18 समस्या समाधान की प्रक्रिया के चरणों को समझाइए। (CO1)
- प्र.19 डिजिटल इंडिया पोर्टल के चार उद्देश्यों को लिखिए। (CO1)
- प्र.20 MS ऑफिस के विभिन्न टूल्स की व्याख्या कीजिए। (CO4)
- प्र.21 वोलाटाइल एवं नॉन-वोलाटाइल मेमोरी में अंतर बताइए। (CO2)
- प्र.22 सोशल मीडिया के लाभ एवं हानियाँ लिखिए। (CO1)

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन में से किन्हीं दो प्रश्नों को हल कीजिए। (2x8=16)

- प्र.23 कंप्यूटर का ब्लॉक डायग्राम बनाकर समझाइए। (CO1)
- प्र.24 फ्लोचार्ट में उपयोग किए जाने वाले विभिन्न प्रतीकों की व्याख्या कीजिए। (CO4)
- प्र.25 निम्न पर संक्षिप्त टिप्पणी लिखिए:
- | | |
|----------------------|-----------------|
| क) एल्गोरिथ्म | ख) गूगल कैलेंडर |
| ग) डिजिटल मार्केटिंग | घ) वेब ब्राउजर |

2nd Sem. / Automobile, Chemical, Chem P&P, Civil, Computer, Electrical, ECE, Instrumentation & Central Engg., Mechanical, Mechanical (Tool & Die Design), Automation & Robotics, Medical electronics Artificial Intelligence & Machine Learning, Computer (For Speech and Hearing Impaired), ECE (For Speech and Hearing Impaired) Agri, Ceramic, Chem, Food Tech, I & C, Plastic Prod., Mechatronics, Text Proc, Text Tech, Med Eltx, Eltx & Inst, GE, CAD/CAM, CNC, Metallurgy, F&F Civil Constr, Text Chem, Pack Tech, Printing Tech, Power Stat Engg, Power Eltx, Elect & Eltx Engg, Paint Tech, Ruber Tech, Polymer Engg., Highway Engg. Fab. Tech, AME, Aeronautical Engg. Fire Tech & Safety
Subject : Applied Mathematics - II

Time : 3 Hrs.

M.M. : 60

Section-A

Note: Multiple Choice questions. All questions are compulsory. (6x1=6)

Q.1 $\frac{d}{dx} (\sin x) =$ _____

(a) $\cos x$

(b) $-\cos x$

(c) $\tan x$

(d) $\sec^2 x$

Q.2 If $f(x) = x^3 + x + 2$, then $f(1) =$ _____

(a) 0

(b) 1

(c) 4

(d) 3

Q.3 $\int_0^1 2dx =$

(a) 0

(b) x

(c) 1

(d) 2

Q.4 Which of the following is linear differential equation:-

(a) $\frac{dy}{dx} + \frac{1}{dy/dx} = 4$ (b) $\frac{ydx}{dx} + y = \log x$

(c) $\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right)^2 + 3\log x = 0$

(d) $\frac{d^2y}{dx^2} - \frac{2dy}{dx} + 4x = 0$

Q.5 The file saved in Scilab is with extension.

(a) .m

(b) .sci

(c) .scilab

(d) None of these

Q.6 What is Mode of the data.

6, 10, 1, 5, 6, 2, 6, 2, 6

(a) 6

(b) 10

(c) 1

(d) 5

Section-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 $\lim_{x \rightarrow 0} \cos x = \underline{\hspace{2cm}}$

Q.8 $\frac{d}{dx}(x^3) = 9x$? (True/False).

250022/220022/212822/
(2) 200022/170022/120022/030022

Q.9 Find the Mean of 3, 3, 9, 4, 5.

Q.10 What is the degree of $\left(\frac{d^3y}{dx^2}\right)^2 + 3\left(\frac{dy}{dx}\right) + 9x = 0$

Q.11 The command line used in Scilab begins with _____.

Q.12 Write down formula of find area using Simpson's rule.

Section-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Differentiate $Y = \frac{x+3}{x-2}$ with respect to x .

Q.14 Evaluate $\lim_{x \rightarrow 0} \frac{\sin 2x}{\tan 3x}$

Q.15 Find $\frac{d^2y}{dx^2}$ if $y = \sin 3x + \cos 2x$.

Q.16 Write four disadvantages of Scilab.

Q.17 Write two advantages of Scilab and Matlab.

Q.18 Evaluate $\int_0^{\frac{\pi}{2}} \tan^3 x \sin^5 x \, dx$

Q.19 Evaluate $\int (x^4 + 8x + 1) dx$

Q.20 Find Mean of set value.

5, 4, 8, 9, 10, 6, 7.

Q.21 Find the area under the curve $y = x^2 + 2$ between the x -axis and $1 \leq x \leq 2$.

Q.22 Find Mean for the following data.

x	5	3	2	10	15
f	6	1	2	9	8

Section-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Find all the points of maximum and minimum and their corresponding maximum and minimum value of the function $f(x) = 2x^3 + 21x^2 + 36x - 20$.

Q.24 Apply Simpson rule to evaluate $\int_0^8 (x + 2)$ by taking six equal interval.

Q.25 Find the standard derivation for the following distribution.

x	2	8	9	5
f	5	2	6	4

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(4) 250022/220022/212822/
200022/170022/120022/030022

2nd Sem. / Automobile, Chemical, Chem P&P, Civil, Computer, Electrical, ECE, Instrumentation & Central Engg., Mechanical, Mechanical (Tool & Die Design), Automation & Robotics, Medical electronics Artificial Intelligence & Machine Learning, Computer (For Speech and Hearing Impaired), ECE (For Speech and Hearing Impaired) Agri, Ceramic, Chem, Food Tech, I & C, Plastic Prod., Mechatronics, Text Proc, Text Tech, Med Eltx, Eltx & Inst, GE, CAD/CAM, CNC, Metallurgy, F&F Civil Constr, Text Chem, Pack Tech, Printing Tech, Power Stat Engg, Power Eltx, Elect & Eltx Engg, Paint Tech, Ruber Tech, Polymer Engg., Highway Engg. Fab. Tech, AME, Aeronautical Engg. Fire Tech & Safety
Subject : Applied Mathematics - II

Time : 3 Hrs.

M.M. : 60

Section-A

नोट: बहुविकल्पीय प्रश्ना सभी प्रश्न अनिवार्य हैं।

(6x1=6)

प्र.1 $\frac{d}{dx} (\sin x) = \underline{\hspace{2cm}}$

(क) $\cos x$ (ख) $-\cos x$ (ग) $\tan x$ (घ) $\sec^2 x$

प्र.2 यदि $f(x) = x^3 + x + 2$, तो $f(1) = \underline{\hspace{2cm}}$

(क) 0

(ख) 1

(ग) 4

(घ) 3

प्र.3 $\int_0^1 2dx =$

(क) 0

(ख) x

(ग) 1

(घ) 2

(5)

250022/220022/212822/

200022/170022/120022/030022

प्र.4 निम्न में से कौन-सा रैखिक अवकल समीकरण है:-

(क) $\frac{dy}{dx} + \frac{1}{dy/dx} = 4$ (ख) $\frac{ydx}{dx} + y = \log x$

(ग) $\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right)^2 + 3 \log x = 0$

(घ) $\frac{d^2y}{dx^2} - \frac{2dy}{dx} + 4x = 0$

प्र.5 Scilab में सेव की गई फ़ाइल का एक्सटेंशन होता है:

(क) .m

(ख) .sci

(ग) .scilab

(घ) None of these

प्र.6 निम्न आंकड़ों का बहुलक क्या है:

6, 10, 1, 5, 6, 2, 6, 2, 6

(क) 6

(ख) 10

(ग) 1

(घ) 5

Section-B

नोट: वस्तुनिष्ठ/रिक्त स्थान पूर्ति प्रकार के प्रश्न सभी प्रश्न अनिवार्य हैं।

(6x1=6)

प्र.7 $\lim_{x \rightarrow 0} \cos x = \underline{\hspace{2cm}}$

प्र.8 $\frac{d}{dx}(x^3) = 9x$? (सही/गलत)

(6) 250022/220022/212822/
200022/170022/120022/030022

प्र.9 3, 3, 9, 4, 5 का माध्य ज्ञात कीजिए।

प्र.10 $\left(\frac{d^3y}{dx^2}\right)^2 + 3\left(\frac{dy}{dx}\right) + 9x = 0$ की डिग्री क्या है?

प्र.11 Scilab में कमांड लाइन _____ से प्रारंभ होती है।

प्र.12 सिम्पसन नियम द्वारा क्षेत्रफल ज्ञात करने का सूत्र लिखिए।

Section-C

नोट: लघु उत्तरीय प्रश्न। दस में से कोई आठ प्रश्न हल करें। (8x4=32)

प्र.13 x के सापेक्ष $Y = \frac{x+3}{x-2}$ का अवकलन कीजिए।

प्र.14 $\lim_{x \rightarrow 0} \frac{\sin 2x}{\tan 3x}$ का मान ज्ञात कीजिए।

प्र.15 यदि $y = \sin 3x + \cos 2x$ तो $\frac{d^2y}{dx^2}$ ज्ञात कीजिए।

प्र.16 Scilab के चार नुकसान लिखिए।

प्र.17 Scilab और Matlab के दो-दो लाभ लिखिए।

प्र.18 $\int_0^{\frac{\pi}{2}} \tan^3 x \sin^5 x \, dx$ का मान ज्ञात कीजिए।

प्र.19 $\int (x^4 + 8x + 1) dx$ का मान ज्ञात कीजिए।

प्र.20 निम्न मानों का माध्य ज्ञात कीजिए:

5, 4, 8, 9, 10, 6, 7.

प्र.21 वक्र $y=x^2+2$ के नीचे x -अक्ष और $1 \leq x \leq 2$ के बीच का क्षेत्रफल ज्ञात कीजिए।

प्र.22 निम्न डेटा का माध्य ज्ञात कीजिए:

x	5	3	2	10	15
f	6	1	2	9	8

Section-D

नोट: दीर्घ उत्तरीय प्रश्न। तीन में से कोई दो प्रश्न हल करें। (2x8=16)

प्र.23 फलन $f(x)=2x^3+21x^2+36x-20$ के अधिकतम और न्यूनतम बिंदु तथा उनके अनुसार अधिकतम तथा न्यूनतम मान ज्ञात कीजिए।

प्र.24 सिम्पसन नियम का प्रयोग करते हुए (छह समान अंतराल लेकर)
 $\int_0^8 (x+2)$ का मान ज्ञात कीजिए।

प्र.25 निम्न वितरण के लिए मानक विचलन ज्ञात कीजिए:

x	2	8	9	5
f	5	2	6	4

No. of Printed Pages : 8

250023/220023/212823

Roll No. ~~25224170050~~ 2

/200023/170023/120023

/030023

2nd Sem / Automobile, Civil, Computer, Electrical, ECE, Instrumentation & Control engg., Mechanical. Mechanical (Tool & die Design), Automation & Robotics, Medical electronics, Artificial Intelligence & Machine Learning, Computer (For speech and Hearing Impaired), ECE (For Speech and Hearing Impaired) Agri, Ceramic, Chem, P & P, Eltx, Food Tech, I & C, Plastic, Prod, Mechatronics, Med Eltx, Eltx & Inst, GE, CAD/CAM, CNC, Metallurgy, F&F, Civil Constr, Pack Tech, Printing Tec, Power Stat Engg., Power Eltx, Elect & Eltx Engg, Paint Tech, Ruber Tech, Polymer Engg., Highway Engg., Fab. Tech, AME, Aeronautical Engg., Fire Tech & Safety

Subject : Applied Physics - II

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The frequency of a sound wave is 200 Hz and its wave length is 2m. What is the speed of the sound wave? (CO1)

a) 400 m/s

b) 200 m/s

c) 80 m/s

d) 100 m/s

(1) 250023/220023/212823

/200023/170023/120023

/030023

- Q.2 From which medium sound wave cannot pass through (CO1)
- a) Solid
 - b) Vacuum
 - c) Ideal gas
 - d) Liquid
- Q.3 The angle of reflection is always (CO2)
- a) Greater than the angle of incidence
 - b) Less than the angle of incidence
 - c) Equal to the angle of incidence
 - d) Unrelated to the angle of incidence
- Q.4 Unit of electric charge is (CO3)
- a) ampere
 - b) coulomb
 - c) farad
 - d) volt
- Q.5 Material that are weakly repelled by a magnetic fields are classified as (CO4)
- a) Ferromagnetic
 - b) Paramagnetic
 - c) Diamagnetic
 - d) Super Paramagnetic
- Q.6 The energy of photon is equal to (CO5)
- a) $h\nu$
 - b) $\frac{3}{2} h\nu$
 - c) $h\nu/2$
 - d) None of them

(2) 250023/220023/212823
/200023/170023/120023
/030023

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Define sound wave?
Q.8 What is refraction of light? (CO2)
Q.9 Define resistance. (CO3)
Q.10 Define intrinsic semiconductors. (CO4)
Q.11 Define direct and alternating current? (CO3)
Q.12 What is the size range of nanomaterials? (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 What are the main components of an optical fiber? (CO5)
Q.14 Explain the concept of magnetic field lines and their properties. (CO4)
Q.15 Explain formation of energy bands in solids. (CO4)
Q.16 State and explain Gauss's law in electrostatics.
Q.17 Define the series and parallel combination of resistance. Write formula of equivalent resistance in both combinations. (CO3)
Q.18 What is wave motion? Describe the characteristics of wave motion. (CO1)

(3) 250023/220023/212823
/200023/170023/120023
/030023

- Q.19 What is the principle of superposition of waves?
Define interference and diffraction of light waves.
(CO2)
- Q.20 Define free, forced and resonant vibration give two example of each.
- Q.21 Give uses of telescope. (CO2)
- Q.22 Give four uses of nanotechnology. (CO5)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 a) Give properties of electric lines of force. (CO3)
b) Derive an expression of electric field intensity due to a point charge. (CO3)
- Q.24 Explain classification of materials on the basis of magnetism. Give two example of each. (CO4)
- Q.25 a) Differentiate b/w intrinsic and extrinsic semi-conductors.
b) Give four properties of lasers?

No. of Printed Pages : 8

250023/220023/212823

Roll No.

/200023/170023/120023

/030023

2nd Sem / Automobile, Civil, Computer, Electrical, ECE, Instrumentation & Control engg., Mechanical. Mechanical (Tool & die Design), Automation & Robotics, Medical electronics, Artificial Intelligence & Machine Learning, Computer (For speech and Hearing Impaired), ECE (For Speech and Hearing Impaired) Agri, Ceramic, Chem, P & P, Eltx, Food Tech, I & C, Plastic, Prod, Mechatronics, Med Eltx, Eltx & Inst, GE, CAD/CAM, CNC, Metallurgy, F&F, Civil Constr, Pack Tech, Printing Tec, Power Stat Engg., Power Eltx, Elect & Eltx Engg, Paint Tech, Ruber Tech, Polymer Engg., Highway Engg., Fab. Tech, AME, Aeronautical Engg., Fire Tech & Safety

Subject : Applied Physics - II

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 किसी ध्वनि तरंग की आवृत्ति 200 Hz तथा तरंगदैर्घ्य 2m है।
ध्वनि तरंग का वेग क्या होगा? (CO1)

क) 400 m/s

ख) 200 m/s

ग) 80 m/s

घ) 100 m/s

प्र.2 ध्वनि तरंग किस माध्यम से नहीं गुजर सकती? (CO1)

क) ठोस

ख) निर्वात

ग) आदर्श गैस

घ) द्रव

(5) 250023/220023/212823

/200023/170023/120023

/030023

प्र.3 परावर्तन कोण सदैव होता है (CO2)

क) आपतन कोण से अधिक

ख) आपतन कोण से कम

ग) आपतन कोण के बराबर

घ) आपतन कोण से असंबंधित

प्र.4 विद्युत आवेश की इकाई है (CO3)

क) एम्पीयर

ख) कलाम

ग) फ़ैराड

घ) वोल्ट

प्र.5 वे पदार्थ जो चुंबकीय क्षेत्र द्वारा कमजोर रूप से प्रतिकर्षित होते हैं, कहलाते हैं (CO4)

क) फेरोमैग्नेटिक

ख) पैरामैग्नेटिक

ग) डायामैग्नेटिक

घ) सुपर पैरामैग्नेटिक

प्र.6. फोटॉन की ऊर्जा के बराबर होती है (CO5)

क) $h\nu$

ख) $3/2 \text{ } h\nu$

ग) $h\nu/2$

घ) इनमें से कोई नहीं

भाग - ख

नोट:- वस्तुनिष्ठ / रिक्त स्थान पूर्ति प्रकार के प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.7 ध्वनि तरंग को परिभाषित कीजिए।

प्र.8 प्रकाश के अपवर्तन से क्या अभिप्राय है? (CO2)

प्र.9 प्रतिरोध को परिभाषित कीजिए। (CO3)

(6) 250023/220023/212823
/200023/170023/120023
/030023

- प्र.10 आंतरिक अर्धचालक को परिभाषित कीजिए। (CO4)
 प्र.11 दिष्ट धारा एवं प्रत्यावर्ती धारा को परिभाषित कीजिए। (CO3)
 प्र.12 नैनो पदार्थों का आकार परास क्या होता है? (CO5)

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। दस प्रश्नों में से कोई आठ प्रश्न हल कीजिए।
 (8x4=32)

- प्र.13 ऑप्टिकल फाइबर के मुख्य अवयव कौन-कौन से हैं? (CO5)
 प्र.14 चुंबकीय क्षेत्र रेखाओं की अवधारणा एवं उनके गुणों की व्याख्या कीजिए। (CO4)
 प्र.15 ठोसों में ऊर्जा बैंडों के निर्माण की व्याख्या कीजिए। (CO4)
 प्र.16 स्थिर वैद्युतिकी में गाउस के नियम को लिखिए एवं समझाइए।
 प्र.17 प्रतिरोधों के श्रेणीक्रम एवं समांतर संयोजन को परिभाषित कीजिए।
 दोनों में तुल्य प्रतिरोध का सूत्र लिखिए। (CO3)
 प्र.18 तरंग गति क्या है? तरंग गति की विशेषताओं का वर्णन कीजिए।
 (CO1)
 प्र.19 तरंगों के अध्यारोपण सिद्धांत क्या है? प्रकाश तरंगों के व्यतिकरण एवं विवर्तन को परिभाषित कीजिए। (CO2)
 प्र.20 मुक्त, प्रेरित एवं अनुनादी कंपन को परिभाषित कीजिए तथा प्रत्येक के दो उदाहरण दीजिए।
 प्र.21 दूरदर्शी के उपयोग लिखिए। (CO2)
 प्र.22 नैनो प्रौद्योगिकी के चार उपयोग लिखिए। (CO5)

भाग - घ

नोट:- नोट: दीर्घ उत्तरीय प्रश्न। तीन प्रश्नों में से कोई दो प्रश्न हल कीजिए। (2x8=16)

प्र.23 क) विद्युत बल रेखाओं के गुण लिखिए। (CO3)

ख) बिंदु आवेश के कारण उत्पन्न विद्युत क्षेत्र तीव्रता का व्यंजक व्युत्पन्न कीजिए। (CO3)

प्र.24 चुंबकत्व के आधार पर पदार्थों के वर्गीकरण की व्याख्या कीजिए। प्रत्येक के दो उदाहरण दीजिए। (CO4)

प्र.25 क) आंतरिक एवं बाह्य अर्धचालकों में अंतर बताइए।
ख) लेजर के चार गुण लिखिए।

Roll No.

250024/220024

2nd Sem / Automobile, Mechanical, mechanical (Tool and Die Design), Fire Tech & Safety

Subject : Applied Chemistry

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 In the modern periodic table, the number of groups are _____. (CO1)

- a) 7 b) 18
c) 6 d) 2

Q.2 The pH value of a basic solution is_____ (CO2)

- a) 7 b) More than 7
- c) Less than 7 d) All of the above

Q.3 _____ is an example of solid fuel. (CO3)

- a) Wood b) Petrol
c) LPG d) Crude oil

Q.11 All macromolecules are polymers. (True/False)
(CO4)

Q.12 An alkaline medium increases the rate of rusting of Iron. (True/False)
(CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Write the electronic configuration of Na (Atomic Number= 11) and ca (Atomic Number= 20) (CO1)

Q.14 Define: (CO2)

i) Mineral

ii) Gangue

Q.15 Explain any two mechanical properties of Metals.
(CO1)

Q.16 Define

i) Soft water

ii) Temporary hardness

Q.17 Explain ignition temperature and viscosity index.
(CO3)

Q.18 Write the difference between thermoplastic and thermosetting plastic.
(CO4)

Q.19 Write the preparation and uses of Nylon 66. (CO4)

Q.20 Write any two methods of prevention of corrosion. (CO5)

Q.21 Define dry and wet corrosion. (CO5)

Q.22 Explain covalent bond with example. (CO1)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 a) Define pH and write it's any two applications. (CO2)

b) Explain scale and sludge formation (CO2)

Q.24 a) Write the properties of CNG. (CO3)

b) Write the advantages of liquid and gaseous fuel over solid fuel. (CO3)

Q.25 a) Write the function of lubricants. (CO3)

b) What do you mean by Heisenberg's uncertainty principle. Explain it. (CO1)

No. of Printed Pages : 8

250024/220024

Roll No.

**2nd Sem / Automobile, Mechanical, mechanical
(Tool and Die Design), Fire Tech & Safety**

Subject : Applied Chemistry

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 आधुनिक आवर्त सारणी में समूहों की संख्या _____ है।

क) 7

ख) 18

(CO1)

ग) 6

घ) 2

प्र.2 क्षारीय विलयन का pH मान _____ होता है। (CO2)

क) 7

ख) 7 से अधिक

ग) 7 से कम

घ) उपरोक्त सभी

प्र.3 _____ ठोस ईंधन का उदाहरण है। (CO3)

क) लकड़ी

ख) पेट्रोल

ग) LPG

घ) कच्चा तेल

प्र.4 S-ऑर्बिटल में अधिकतम इलेक्ट्रॉनों की संख्या होती है:

क) 4

ख) 3

(CO3)

ग) 2

घ) 6

प्र.5 $\text{CH}_2 = \text{CHCl}$ _____ है। (CO4)

क) एथेन ख) विनाइल क्लोराइड

ग) पॉलीथीन घ) इनमें से कोई नहीं

प्र.6 भूरी जंग _____ है। (CO5)

क) जलयोजित फेरिक ऑक्साइड

ख) FeCO_3

ग) CO_2 घ) FeO

भाग - ख

नोट:- वस्तुनिष्ठ प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.7 धातुएँ ठोस होती हैं, सिवाय _____ के। (CO1)

प्र.8 स्टील और ड्यूरालुमिन _____ के उदाहरण हैं। (धातु / मिश्रधातु) (CO2)

प्र.9 P.N.G. का पूर्ण रूप लिखिए। (CO3)

प्र.10 वह जल जिसमें साबुन आसानी से नहीं घुलता, उसे _____ कहते हैं। (CO2)

प्र.11 सभी मैक्रोमॉलिक्यूल पॉलिमर होते हैं। (सही/गलत) (CO4)

प्र.12 क्षारीय माध्यम लोहे में जंग लगने की दर को बढ़ाता है। (सही/गलत) (CO5)

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। 10 में से किन्हीं 8 प्रश्नों को हल कीजिए।

(8x4=32)

प्र.13 Na (परमाणु संख्या = 11) और Ca (परमाणु संख्या = 20) का इलेक्ट्रॉनिक विन्यास लिखिए। (CO1)

प्र.14 परिभाषित कीजिए: (CO2)

i) खनिज

ii) गैंग (Gangue)

प्र.15 धातुओं के किसी दो यांत्रिक गुणों की व्याख्या कीजिए। (CO1)

प्र.16 परिभाषित कीजिए:

i) मृदु जल

ii) अस्थायी कठोरता

प्र.17 प्रज्वलन ताप एवं श्यानता सूचकांक समझाइए। (CO3)

प्र.18 थर्मोप्लास्टिक एवं थर्मोसेटिंग प्लास्टिक में अंतर लिखिए। (CO4)

प्र.19 नायलॉन 66 की तैयारी एवं उपयोग लिखिए। (CO4)

प्र.20 संक्षारण को रोकने के कोई दो उपाय लिखिए। (CO5)

प्र.21 शुष्क एवं आर्द्र संक्षारण को परिभाषित कीजिए। (CO5)

प्र.22 सहसंयोजक बंध को उदाहरण सहित समझाइए। (CO1)

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन में से किन्हीं दो प्रश्नों को हल कीजिए। (2x8=16)

प्र.23 क) pH को परिभाषित कीजिए तथा इसके कोई दो अनुप्रयोग लिखिए। (CO2)

ख) स्केल एवं स्लज बनने की प्रक्रिया समझाइए। (CO2)

प्र.24 क) CNG के गुण लिखिए। (CO3)

ख) ठोस ईंधनों की तुलना में द्रव एवं गैसीय ईंधनों के लाभ लिखिए। (CO3)

प्र.25 क) स्नेहक के कार्य लिखिए। (CO3)

ख) हाइजेनबर्ग के अनिश्चितता सिद्धांत को समझाइए। (CO1)

No. of Printed Pages : 8

250021/220021/212824

Roll No.

/170332

**2nd Sem / Automobile, Civil, Mechanical, Plastic Technology,
Automation & Robotics, Fire Tech & Safety**

Subject : Applied Mechanics

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Two equilibrium forces acting on a body are

- a) equal in magnitude
- b) act along the same straight line
- c) Opposite in direction
- d) All of these

Q.2 Scalar quantities possess

- a) both magnitude and direction
- b) direction only
- c) magnitude only
- d) None of these

Q.3 The product of either force of couple with the arm of the couple is called

(1) 250021/220021/212824

/170332

- a) Resultant couple
- b) moment of the forces
- c) moment of the couple
- d) None of these

Q.4 Angle of friction is always

- a) $>90^\circ$
- b) $>270^\circ$
- c) $<90^\circ$
- d) $>180^\circ$

Q.5 C.G of solid cylinder of radius R and height h is

- a) $h/2$
- b) $h/3$
- c) $2h/3$
- d) None of these

Q.6 Efficiency of ideal machine is

- a) 1
- b) zero
- c) >1
- d) <1

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define fundamental Quantities.

Q.8 Forces must possess _____

Q.9 Sliding friction is always _____ than the rolling friction.

(2) 250021/220021/212824
/170332

Q.10 Moment of a couple is known as _____

Q.11 Define momentum

Q.12 Define Velocity ratio.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Write the applications of applied Mechanics.

Q.14 Explain Parallelogram law of forces.

Q.15 State Lami's Theorem.

Q.16 What is the difference between simple lever and compound lever.

Q.17 Derive the condition for reversibility of a machine.

Q.18 Difference between centroid and center of gravity.

Q.19 Differentiate between static and dynamic friction.

Q.20 Discuss friction is necessity as well as evil.

Q.21 Where does C.G. of the following section lie; Ellipse, Semi-circle and Hemisphere.

Q.22 Define machine. What are the advantages of machine?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Find the angle between two equal forces of magnitude F each acting at a point, when their resultant is equal to (a) F and (b) $F/2$

Q.24 A body of weight 300 N is lying on a rough horizontal plane having a coefficient of friction 0.3 . Find the magnitude of the force which can move the body while acting at an angle of 25° with the horizontal.

Q.25 Explain second system of pulley.

No. of Printed Pages : 8

250021/220021/212824

Roll No.

/170332

**2nd Sem / Automobile, Civil, Mechanical,
Plastic Technology, Automation & Robotics,
Fire Tech & Safety**

Subject : Applied Mechanics

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 किसी वस्तु पर कार्य करने वाले दो संतुलित बल होते हैं

क) परिमाण में समान

ख) एक ही सीधी रेखा में कार्य करने वाले

ग) दिशा में विपरीत

घ) उपरोक्त सभी

प्र.2 अदिश राशियों में होता है

क) परिमाण और दिशा दोनों

ख) केवल दिशा

ग) केवल परिमाण

घ) इनमें से कोई नहीं

(5) 250021/220021/212824

/170332

प्र.3 युग्म के किसी एक बल तथा उसकी भुजा के गुणनफल को कहा जाता है

- | | |
|--------------------|----------------------|
| क) परिणामी युग्म | ख) बलों का आघूर्ण |
| ग) युग्म का आघूर्ण | घ) इनमें से कोई नहीं |

प्र.4 घर्षण कोण सदैव होता है

- | | |
|-----------------------|------------------------|
| क) 90° से अधिक | ख) 270° से अधिक |
| ग) 90° से कम | घ) 180° से अधिक |

प्र.5 त्रिज्या R तथा ऊँचाई h वाले ठोस बेलन का गुरुत्व केंद्र (C.G.) होता है

- | | |
|-----------|----------------------|
| क) $h/2$ | ख) $h/3$ |
| ग) $2h/3$ | घ) इनमें से कोई नहीं |

प्र.6 आदर्श मशीन की दक्षता होती है

- | | |
|--------------|------------|
| क) 1 | ख) शून्य |
| ग) 1 से अधिक | घ) 1 से कम |

भाग - ख

नोट:- वस्तुनिष्ठ / रिक्त स्थान पूर्ति प्रकार के प्रश्न। सभी प्रश्न अनिवार्य हैं।

(6x1=6)

प्र.7 मौलिक राशियों को परिभाषित कीजिए।

(6) 250021/220021/212824
/170332

- प्र.8 बलों में _____ होना आवश्यक है।
- प्र.9 सरकने वाला घर्षण, लुढ़कने वाले घर्षण से सदैव _____ होता है।
- प्र.10 युग्म के आघूर्ण को _____ कहा जाता है।
- प्र.11 संवेग को परिभाषित कीजिए।
- प्र.12 वेग अनुपात को परिभाषित कीजिए।

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। दस प्रश्नों में से कोई आठ प्रश्न हल कीजिए।
(8x4=32)

- प्र.13 अनुप्रयुक्त यांत्रिकी के अनुप्रयोग लिखिए।
- प्र.14 बलों के समांतर चतुर्भुज नियम की व्याख्या कीजिए।
- प्र.15 लैमी का प्रमेय लिखिए।
- प्र.16 साधारण उत्तोलक एवं संयुक्त उत्तोलक में अंतर बताइए।
- प्र.17 मशीन की प्रतिवर्तनीयता की शर्त व्युत्पन्न कीजिए।
- प्र.18 केंद्रक एवं गुरुत्व केंद्र में अंतर बताइए।
- प्र.19 स्थैतिक घर्षण एवं गतिज घर्षण में अंतर बताइए।
- प्र.20 घर्षण आवश्यकता भी है तथा बुराई भी चर्चा कीजिए।

- प्र.21 निम्नलिखित आकृतियों का गुरुत्व केंद्र कहाँ स्थित होता है
दीर्घवृत्त, अर्धवृत्त तथा अर्धगोला।
- प्र.22 मशीन को परिभाषित कीजिए। मशीन के लाभ क्या हैं?

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन प्रश्नों में से कोई दो प्रश्न हल कीजिए।
(2x8=16)

- प्र.23 प्रत्येक F परिमाण वाले दो समान बल किसी बिंदु पर कार्य कर रहे हैं। उनके बीच का कोण ज्ञात कीजिए जब उनका परिणामी हो

क) F

ख) $F/2$

- प्र.24 300 N भार का एक पिंड एक खुरदरे क्षैतिज तल पर रखा है, जहाँ घर्षण गुणांक 0.3 है। क्षैतिज से 25° के कोण पर कार्य करने वाले उस बल का परिमाण ज्ञात कीजिए जो पिंड को गति प्रदान कर सके।

- प्र.25 पुली की द्वितीय प्रणाली की व्याख्या कीजिए।

**2nd Sem / Agri, Architectural Assistantship,
Ceramic, Civil, DMLT, Advance Diploma in Tool and
Die Making, Plastic Technology, Textile Design,
Textile Processing, Text. Tech., Automation & Robotics,
DMLT(For Speech and Hearing Impaired),
Fire Tech & Safety**

Subject : Fundamentals of IT

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which device is used to store permanent data?

- | | |
|----------|-------------|
| a) RAM | b) ROM |
| c) Cache | d) Register |

Q.2 Which protocol is used to transfer web pages?

- | | |
|---------|---------|
| a) SMTP | b) HTTP |
| c) FTP | d) POP |

Q.3 The full form of URL is:

- a) Uniform Resource Link
- b) Unified Reference Location
- c) Uniform Resource Locator
- d) Universal Retrieval Locator

Q.11 A Nibble has _____ bits.

Q.12 A _____ connects multiple computers in a network.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 List various steps involved in problem solving.

Q.14 Draw and explain the block diagram of a computer system.

Q.15 What is booting? Differentiate between cold and hot booting.

Q.16 Explain steps to send an email with attachment using gmail.

Q.17 What is the difference between RAM and ROM?

Q.18 Write an algorithm to find sum of first N natural numbers.

Q.19 Explain the features of Open Office Writer.

Q.20 Write short notes on Flowchart and its symbols.

Q.21 What is digital marketing? List any four tools.

Q.22 Explain the use of Google Drive and Google Calender.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 What is computer memory? Explain its types.

Q.24 What is a computer? Explain with a block diagram and the working of a computer system.

Q.25 What is social media? Explain its advantages and disadvantages.

No. of Printed Pages : 8
Roll No.

250027/220027/212825

**2nd Sem / Agri, Architectural Assistantship,
Ceramic, Civil, DMLT, Advance Diploma in Tool and
Die Making, Plastic Technology, Textile Design,
Textile Processing, Text. Tech., Automation & Robotics,
DMLT(For Speech and Hearing Impaired),
Fire Tech & Safety**

Subject : Fundamentals of IT

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 स्थायी डेटा को संग्रहित करने के लिए कौन सा उपकरण
उपयोग किया जाता है?

क) आर ए एम

ख) आर ओ एम

ग) कैश

घ) रजिस्टर

प्र.2 वेब पेज ट्रांसफर करने के लिए कौन सा प्रोटोकॉल उपयोग
होता है?

क) एस एम टी पी

ख) एच टी पी

ग) एफ टी पी

घ) पी ओ पी

(5) 250027/220027/212825

प्र.3 यू आर एल का पूर्ण रूप क्या है?

क) यूनिफॉर्म रिसोर्स लिंक

ख) यूनिफाइड रेफरेंस लोकेशन

ग) यूनिफॉर्म रिसोर्स लोकेटर

घ) यूनिवर्सल रिट्रीवल लोकेटर

प्र.4 सबसे तेज मेमोरी कौन सी है?

क) कैश

ख) हार्ड डिस्क

ग) सी डी-आर ओ एम

घ) आर ए एम

प्र.5 तार्किक क्रियाओं के लिए कौन सा घटक जिम्मेदार है?

क) कंट्रोल यूनिट

ख) ए एल यू

ग) आर ओ एम

घ) आर ए एम

प्र.6 निम्न में से कौन ईमेल प्रदाता है?

क) याहू

ख) गूगल

ग) हॉटमेल

घ) उपरोक्त सभी

भाग - ख

नोट:- वस्तुनिष्ठ प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

- प्र.7 कंप्यूटर की प्राथमिक मेमोरी का नाम लिखिए।
- प्र.8 ऑपरेटिंग सिस्टम एक एप्लिकेशन सॉफ्टवेयर है।
(सही/गलत)
- प्र.9 फ्लोचार्ट में निर्णय को दर्शाने के लिए _____ आकार का उपयोग किया जाता है।
- प्र.10 आर ए एम डेटा को स्थायी रूप से संग्रहित करती है।
(सही/गलत)
- प्र.11 एक निबल में _____ बिट होते हैं।
- प्र.12 एक _____ नेटवर्क में कई कंप्यूटरों को जोड़ता है।

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। 10 में से किन्हीं 8 प्रश्नों को हल कीजिए।
(8x4=32)

- प्र.13 समस्या समाधान की विभिन्न चरणों की सूची बनाइए।
- प्र.14 कंप्यूटर सिस्टम का ब्लॉक डायग्राम बनाकर समझाइए।
- प्र.15 बूटिंग क्या है? कोल्ड और हॉट बूटिंग में अंतर बताइए।

- प्र.16 जीमेल का उपयोग करके अटैचमेंट के साथ ईमेल भेजने के चरण समझाइए।
- प्र.17 आर ए एम और आर ओ एम में अंतर बताइए।
- प्र.18 प्रथम एन प्राकृतिक संख्याओं का योग ज्ञात करने के लिए एल्गोरिथ्म लिखिए।
- प्र.19 ओपन आफिस राइटर की विशेषताएँ बताइए।
- प्र.20 फ्लोचार्ट और उसके प्रतीकों पर संक्षिप्त टिप्पणी लिखिए।
- प्र.21 डिजिटल मार्केटिंग क्या है? इसके चार टूल्स लिखिए।
- प्र.22 गूगल ड्राइव और गूगल कलैण्डर के उपयोग समझाइए।

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन में से किन्हीं दो प्रश्नों को हल कीजिए।

(2x8=16)

- प्र.23 कंप्यूटर मेमोरी क्या है? इसके प्रकार समझाइए।
- प्र.24 कंप्यूटर क्या है? ब्लॉक डायग्राम के साथ कंप्यूटर सिस्टम की कार्यप्रणाली समझाइए।
- प्र.25 सोशल मीडिया क्या है? इसके लाभ और हानियाँ बताइए।

No. of Printed Pages : 4

220125/170025/120025

Roll No.

/030025

2nd Sem / Agri, Automobile, Mechanical, Mechanical Tool & die Design) Chem, P&P, Civil, Elect, Plastic, Prod, Mechatronics, GE CAD/CAM, CNC, Metallurgy, F&F, Civil Constr, Pack Tech, Printing Tech, Power Stat Engg, Power Eltx, Elect & Eltx Engg, Paint Tech, Ruber Tech, Polymer Engg., Highway Engg., Fab Tech. Fire Tech & Safety, AME

**Subject : Mechanical Engineering Drawing -I /
Engineering Drawing - II**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which thread is used in lead screw of lathe?

- | | |
|------------------|-------------------|
| a) B.S.W. thread | b) Square thread |
| c) Acme thread | d) Knuckle thread |

Q.2 Width across flats in hexagonal nut is

- | | |
|------------------------|---------|
| a) $1.5D + 3\text{mm}$ | b) $3D$ |
| c) $1.8D + 9\text{mm}$ | d) $2D$ |

Q.3 Halving and bridle joints are

- | | |
|------------------|-------------------|
| a) welded joints | b) riveted joints |
| c) cotter joints | d) wooden joints |

(1) 220125/170025/120025

/030025

- Q.4 Coupling may be broadly divided into
- a) rigid coupling b) flexible coupling
 - c) Both (a) and (b) d) flange coupling
- Q.5 The innermost portion of thread is called
- a) crest b) root
 - c) flank d) slope
- Q.6 The standard taper of the taper key is
- a) 1:10 b) 1:100
 - c) 1:1000 d) All of the above

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Define assembly drawing.
- Q.8 Define flank.
- Q.9 Define foundation bolt.
- Q.10 Define lead.
- Q.11 Define machine screw.
- Q.12 Define stud.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Show the B.A thread by rough sketch.
- Q.14 Sketch the Split pin nut.
- Q.15 Draw freehand sketch of Rag bolt.
- Q.16 Define sunk key and list its types.
- Q.17 Draw one view of square nut when internal diameter of nut is 20 mm.
- Q.18 Draw free hand sketch of Muff coupling.
- Q.19 Explain caulking and fullering process.
- Q.20 Draw the following studs.
 - a) Stud with square neck
 - b) Stud with collar
- Q.21 What are the differences between single and multiple start threads?
- Q.22 Define cotter and write the names of cotter joints.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Draw sectional Elevation and Top view of double riveted lap joint (chain type). Take diameter of rivet = 20 mm.

(3) 220125/170025/120025
/030025

Q.24 Draw the free hand sketch of a non-protected flange coupling with proportional dimensions.

Q.25 Detail drawing of closed mortice and tenon joint is shown in figure 1. Draw the following assemble views:

- Front view
- Side view
- Top view

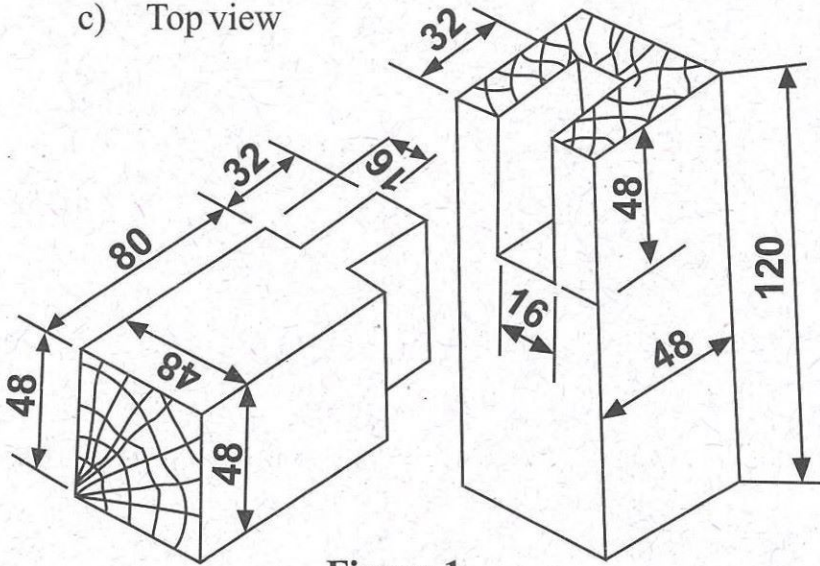


Figure-1

- Note • Dimension units may be taken in mm.
- Assume suitable dimension if not specified or clearly visible in the given figure.

No. of Printed Pages : 8

250026/220026/212826

Roll No.

2nd Sem/ Agri, Architectural Assistantship, Ceramic, Chemical, Chem P & P, Civil, Computer, Electrical, ECE, Food Technology, Instrumentation & Control engg., LIS, DMLT, Advance Diploma in Tool and Die Making, Plastic Technology, Automation & Robotics, Fashion Technology, Fash. desn., Medical electronics, Artificial Intelligence & Machine Learning, Hotel Management & Catering Technology, Fin., Acc. & Aud, Business Management, Computer (For Speech and Hearing Impaired), ECE (For Speech and Hearing Impaired), DMLT (For Speech and Hearing Impaired), Aeronautical Engg.

Subject : Environmental Studies and Disaster Management

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The example of Omnivore is :-

- | | |
|----------|-----------------|
| a) Rat | b) Fox |
| c) Human | d) All of above |

Q.2 Which of the following is a man made source of pollution

- | | |
|----------------------|-----------------------|
| a) Volcanic Eruption | b) Dust storm |
| c) Forest fires | d) Agricultural waste |

(1) 250026/220026/212826

Q.3 Dysentery spreads due to

- a) Humid weather b) Air pollution
- c) Water pollution d) All of the above

Q.4 Which one of the following is a non-biodegradable solid waste?

- a) Plastics b) Tyres
- c) Metals d) All of the above

Q.5 Which of the following is a green house gas?

- a) Carbon dioxide b) methane
- c) Both a and b d) none of the above

Q.6 Land slides often occur in

- a) forest region b) hilly region
- c) desert region d) none of the above

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 An example of herbivore is _____

Q.8 Full form of B.O.D is _____

Q.9 _____ is an example of e-waste.

(2) 250026/220026/212826

Q.10 Full form of CFC is _____.

Q.11 Ozone layer exists in _____

Q.12 The harmful ultraviolet radiations in stratosphere are absorbed by _____ layer in the atmosphere.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Define

i) Environment

ii) Ecosystem

Q.14 What are the primary and secondary pollutants?

Q.15 Write harmful effects of air pollution on plants.

Q.16 Define

i) Dissolved oxygen and

ii) Biochemical oxygen demand

Q.17 Write the advantages of composting.

Q.18 Write the environmental benefits of green buildings.

Q.19 Write the effects of ozone layer depletion on human beings.

Q.20 Define disaster. Name types of disasters with examples.

Q.21 Define stress and trauma.

Q.22 Write the effects of noise pollution.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Define

i) Rain water harvesting

ii) Write methods of rainwater harvesting

Q.24 Define Global warming. Explain mechanism of green house effect

Q.25 Define

i) Water pollution

ii) Flood Write the effects of flood.

No. of Printed Pages : 8

250026/220026/212826

Roll No.

2nd Sem/ Agri, Architectural Assistantship, Ceramic, Chemical, Chem P & P, Civil, Computer, Electrical, ECE, Food Technology, Instrumentation & Control engg., LIS, DMLT, Advance Diploma in Tool and Die Making, Plastic Technology, Automation & Robotics, Fashion Technology, Fash. desn., Medical electronics, Artificial Intelligence & Machine Learning, Hotel Management & Catering Technology, Fin., Acc. & Aud, Business Management, Computer (For Speech and Hearing Impaired), ECE (For Speech and Hearing Impaired), DMLT (For Speech and Hearing Impaired), Aeronautical Engg.

Subject : Environmental Studies and Disaster Management

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 सर्वाहारी का उदाहरण है:

क) चूहा

ख) लोमड़ी

ग) मानव

घ) उपरोक्त सभी

प्र.2 निम्न में से कौन प्रदूषण का मानव निर्मित स्रोत है?

क) ज्वालामुखी विस्फोट

ख) धूल भरी आंधी

ग) वनाग्नि

घ) कृषि अपशिष्ट

(5) 250026/220026/212826

प्र.3 पेचिश फैलती है:

क) आर्द्र मौसम से ख) वायु प्रदूषण से

ग) जल प्रदूषण से घ) उपरोक्त सभी

प्र.4 निम्न में से कौन सा गैर-जैव अपघटनीय ठोस अपशिष्ट है?

क) प्लास्टिक ख) टायर

ग) धातु घ) उपरोक्त सभी

प्र.5 निम्न में से कौन ग्रीनहाउस गैस है?

क) कार्बन डाइऑक्साइड ख) मीथेन

ग) क) और ख) दोनों घ) इनमें से कोई नहीं

प्र.6 भूस्खलन प्रायः कहाँ होते हैं?

क) वन क्षेत्र ख) पहाड़ी क्षेत्र

ग) मरुस्थलीय क्षेत्र घ) इनमें से कोई नहीं

भाग - ख

नोट:- वस्तुनिष्ठ प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.7 शाकाहारी का एक उदाहरण _____ है।

प्र.8 B.O.D का पूर्ण रूप _____ है।

प्र.9 _____ ई-वेस्ट का एक उदाहरण है।

प्र.10 CFC का पूर्ण रूप _____ है।

प्र.11 ओजोन परत _____ में पाई जाती है।

प्र.12 समताप मंडल में हानिकारक पराबैंगनी किरणों को _____ परत द्वारा अवशोषित किया जाता है।

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। 10 में से किन्हीं 8 प्रश्नों को हल कीजिए।
(8x4=32)

प्र.13 परिभाषित कीजिए:

i) पर्यावरण

ii) पारितंत्र

प्र.14 प्राथमिक एवं द्वितीयक प्रदूषक क्या होते हैं?

प्र.15 वायु प्रदूषण के पौधों पर हानिकारक प्रभाव लिखिए।

प्र.16 परिभाषित कीजिए:

i) घुलित ऑक्सीजन

ii) जैव रासायनिक ऑक्सीजन मांग

प्र.17 खाद के लाभ लिखिए।

प्र.18 ग्रीन बिल्डिंग के पर्यावरणीय लाभ लिखिए।

प्र.19 ओजोन परत के क्षय का मानव पर प्रभाव लिखिए।

प्र.20 आपदा को परिभाषित कीजिए। इसके प्रकार उदाहरण सहित लिखिए।

प्र.21 तनाव और आघात को परिभाषित कीजिए।

प्र.22 ध्वनि प्रदूषण के प्रभाव लिखिए।

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन में से किन्हीं दो प्रश्नों को हल कीजिए। (2x8=16)

प्र.23 परिभाषित कीजिए:

i) वर्षा जल संचयन

ii) वर्षा जल संचयन की विधियाँ लिखिए

प्र.24 वैश्विक तापन को परिभाषित कीजिए। ग्रीनहाउस प्रभाव की प्रक्रिया समझाइए।

प्र.25 परिभाषित कीजिए:

i) जल प्रदूषण

ii) बाढ़ -

बाढ़ के प्रभाव लिखिए

No. of Printed Pages : 8
Roll No. 251951700518

250021/220021/212824
/170332

**2nd Sem / Automobile, Civil, Mechanical, Plastic Technology,
Automation & Robotics, Fire Tech & Safety
Subject : Applied Mechanics**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 Two equilibrium forces acting on a body are
- a) equal in magnitude
 - b) act along the same straight line
 - c) Opposite in direction
 - d) All of these
- Q.2 Scalar quantities possess
- a) both magnitude and direction
 - b) direction only
 - c) magnitude only
 - d) None of these
- Q.3 The product of either force of couple with the arm of the couple is called

(1) 250021/220021/212824
/170332

- a) Resultant couple
- b) moment of the forces
- c) moment of the couple
- d) None of these

Q.4 Angle of friction is always

- a) $>90^\circ$
- b) $>270^\circ$
- c) $<90^\circ$
- d) $>180^\circ$

Q.5 C.G of solid cylinder of radius R and height h is

- a) $h/2$
- b) $h/3$
- c) $2h/3$
- d) None of these

Q.6 Efficiency of ideal machine is

- a) 1
- b) zero
- c) >1
- d) <1

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define fundamental Quantities.

Q.8 Forces must possess _____

Q.9 Sliding friction is always _____ than the rolling friction.

Q.10 Moment of a couple is known as _____

Q.11 Define momentum

Q.12 Define Velocity ratio.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Write the applications of applied Mechanics.

Q.14 Explain Parallelogram law of forces.

Q.15 State Lami's Theorem.

Q.16 What is the difference between simple lever and compound lever.

Q.17 Derive the condition for reversibility of a machine.

Q.18 Difference between centroid and center of gravity.

Q.19 Differentiate between static and dynamic friction.

Q.20 Discuss friction is necessity as well as evil.

Q.21 Where does C.G. of the following section lie; Ellipse, Semi-circle and Hemisphere.

Q.22 Define machine. What are the advantages of machine?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Find the angle between two equal forces of magnitude F each acting at a point, when their resultant is equal to (a) F and (b) $F/2$

Q.24 A body of weight 300 N is lying on a rough horizontal plane having a coefficient of friction 0.3. Find the magnitude of the force which can move the body while acting at an angle of 25° with the horizontal.

Q.25 Explain second system of pulley.

No. of Printed Pages : 8

250021/220021/212824

Roll No.

/170332

**2nd Sem / Automobile, Civil, Mechanical,
Plastic Technology, Automation & Robotics,
Fire Tech & Safety**

Subject : Applied Mechanics

Time : 3 Hrs.

M.M. : 60

भाग - क

नोट:- बहु विकल्पीय प्रश्न। सभी प्रश्न अनिवार्य हैं। (6x1=6)

प्र.1 किसी वस्तु पर कार्य करने वाले दो संतुलित बल होते हैं

क) परिमाण में समान

ख) एक ही सीधी रेखा में कार्य करने वाले

ग) दिशा में विपरीत

घ) उपरोक्त सभी

प्र.2 अदिश राशियों में होता है

क) परिमाण और दिशा दोनों

ख) केवल दिशा

ग) केवल परिमाण

घ) इनमें से कोई नहीं

(5) 250021/220021/212824

/170332

प्र.3 युग्म के किसी एक बल तथा उसकी भुजा के गुणनफल को कहा जाता है

- | | |
|--------------------|----------------------|
| क) परिणामी युग्म | ख) बलों का आघूर्ण |
| ग) युग्म का आघूर्ण | घ) इनमें से कोई नहीं |

प्र.4 घर्षण कोण सदैव होता है

- | | |
|-----------------------|------------------------|
| क) 90° से अधिक | ख) 270° से अधिक |
| ग) 90° से कम | घ) 180° से अधिक |

प्र.5 त्रिज्या R तथा ऊँचाई h वाले ठोस बेलन का गुरुत्व केंद्र (C.G.) होता है

- | | |
|-----------|----------------------|
| क) $h/2$ | ख) $h/3$ |
| ग) $2h/3$ | घ) इनमें से कोई नहीं |

प्र.6 आदर्श मशीन की दक्षता होती है

- | | |
|--------------|------------|
| क) 1 | ख) शून्य |
| ग) 1 से अधिक | घ) 1 से कम |

भाग - ख

नोट:- वस्तुनिष्ठ / रिक्त स्थान पूर्ति प्रकार के प्रश्न। सभी प्रश्न अनिवार्य हैं।

(6x1=6)

प्र.7 मौलिक राशियों को परिभाषित कीजिए।

(6) 250021/220021/212824
/170332

- प्र.8 बलों में _____ होना आवश्यक है।
- प्र.9 सरकने वाला घर्षण, लुढ़कने वाले घर्षण से सदैव _____ होता है।
- प्र.10 युग्म के आघूर्ण को _____ कहा जाता है।
- प्र.11 संवेग को परिभाषित कीजिए।
- प्र.12 वेग अनुपात को परिभाषित कीजिए।

भाग - ग

नोट:- लघु उत्तरीय प्रश्न। दस प्रश्नों में से कोई आठ प्रश्न हल कीजिए।
(8x4=32)

- प्र.13 अनुप्रयुक्त यांत्रिकी के अनुप्रयोग लिखिए।
- प्र.14 बलों के समांतर चतुर्भुज नियम की व्याख्या कीजिए।
- प्र.15 लैमी का प्रमेय लिखिए।
- प्र.16 साधारण उत्तोलक एवं संयुक्त उत्तोलक में अंतर बताइए।
- प्र.17 मशीन की प्रतिवर्तनीयता की शर्त व्युत्पन्न कीजिए।
- प्र.18 केंद्रक एवं गुरुत्व केंद्र में अंतर बताइए।
- प्र.19 स्थैतिक घर्षण एवं गतिज घर्षण में अंतर बताइए।
- प्र.20 घर्षण आवश्यकता भी है तथा बुराई भी चर्चा कीजिए।

प्र.21 निम्नलिखित आकृतियों का गुरुत्व केंद्र कहाँ स्थित होता है दीर्घवृत्त, अर्धवृत्त तथा अर्धगोला।

प्र.22 मशीन को परिभाषित कीजिए। मशीन के लाभ क्या हैं?

भाग - घ

नोट:- दीर्घ उत्तरीय प्रश्न। तीन प्रश्नों में से कोई दो प्रश्न हल कीजिए।
(2x8=16)

प्र.23 प्रत्येक F परिमाण वाले दो समान बल किसी बिंदु पर कार्य कर रहे हैं। उनके बीच का कोण ज्ञात कीजिए जब उनका परिणामी हो

क) F

ख) $F/2$

प्र.24 300 N भार का एक पिंड एक खुरदरे क्षैतिज तल पर रखा है, जहाँ घर्षण गुणांक 0.3 है। क्षैतिज से 25° के कोण पर कार्य करने वाले उस बल का परिमाण ज्ञात कीजिए जो पिंड को गति प्रदान कर सके।

प्र.25 पुली की द्वितीय प्रणाली की व्याख्या कीजिए।

No. of Printed Pages : 4
Roll No.

220327

2nd Sem/

Automobile, Mechanical, Mechanical (Tool & Die Design)

Subject : Workshop Technology – I

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which hammer is used for hammering nails in wood

- a) Cross peen hammer b) Ball peen hammer
- c) Sledge hammer d) Power hammer

Q.2 The rake angle used for cutting ductile materials is

- a) Positive b) Negative
- c) Zero d) All of the above

Q.3 Welding is used for making

- a) Permanent Joint b) Temporary Joint
- c) Both a & B d) None of these

Q.4 Lathe centers are provided with standard tapers.

- a) British b) Sharpe
- c) Morse d) None of these

Q.5 Cutting fluid acts as

- a) Lubricant
- b) Anti weld agent
- c) Coolant
- d) All of the above

Q.6 A drilled hole is enlarged by _____ process.

- a) Drilling
- b) Boring
- c) Turning
- d) Milling

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Milling cutter is a single point cutting tool. (True/False)

Q.8 _____ is the hardest known cutting tool material.

Q.9 Oxygen cylinder are painted with _____ colour.

Q.10 Write the full form of M.I.G.

Q.11 Diamond shape pattern on workpiece is embossed on lathe machine by _____ tool.

Q.12 Boring is process of making holes. (True/False)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Name the different types of chisels. Explain the Flat Chisel.

- Q.14 Explain the main parts of a caliper.
- Q.15 Explain feed and depth of cut during metal cutting with neat sketch.
- Q.16 Define tool signature.
- Q.17 Explain gas welding and name the types of flames.
- Q.18 Differentiate between TIG and MIG welding.
- Q.19 Explain any two work holding devices in lathe machine with the help of neat sketch.
- Q.20 Sketch a twist drill and write it's nomenclature.
- Q.21 Explain the principle of boring.
- Q.22 Differentiate between cutting fluids and lubricants.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Describe the function of various parts of a center lathe with the help of neat sketch.
- Q.24 Explain the working principle of arc welding. Discuss the various welding defects.
- Q.25 Name different type of reamers and explain any three.

No. of Printed Pages : 4

221733/181732/121732

Roll No.

/031732/094834/117232

/171743/030434/452

**3rd Sem/ Mechanical Engg, Prod, GE, CAD/CAM,
CNC, Metallurgy, Print Making Tech., Mech (Ad.
Manu. Tech.), Mech Engg (Fabrication Tech), AME**

**Subject : Thermodynamics - I / Thermodynamics/
Pr. of Therm. Engg./ Energy Dynamics / Engineering
Thermodynamics**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Perfect vacuum and zero pressure occurs at

- a) 0°C
- b) 273°C
- c) 273K
- d) -273°C

Q.2 The substance whose evaporation from liquid state is complete, is known as

- a) Vapour
- b) Perfect Steam
- c) Real gas
- d) Perfect gas

Q.3 The change of entropy when a gas rejects heat is given by _____

- a) Negative value
- b) Positive value

(1) 221733/181732/121732

/031732/094834/117232

/171743/030434/452

- c) May be negative or positive
 - d) Zero
- Q.4 The water at a height of hill top boils at a temperature
- a) More than 100°C
 - b) Less than 100°C
 - c) Same as 100°C
 - d) Depends on temperature at hill
- Q.5 Mollier diagram is a plot between
- a) h-s
 - b) t-s
 - c) h-t
 - d) p-v
- Q.6 Which of the following is boiler mounting?
- a) Economizer
 - b) Superheater
 - c) Pressure gauge
 - d) Air preheater

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 The total heat contained in a gas is known as _____
- Q.8 The heat required to raise the temperature of one kg of mass of a substance by one degree is known as _____

(2) 221733/181732/121732
/031732/094834/117232
/171743/030434/452

- Q.9 Second law of thermodynamics is based on conservation of energy (True/False)
- Q.10 For dry steam dryness fraction is _____
- Q.11 In _____ boiler the water tubes are inclined to promote water circulation.
- Q.12 The intercooling is multistage compressor is done to _____

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Define enthalpy & give its expression for constant volume process.
- Q.14 Explain free expansion with example.
- Q.15 Explain the need and working of economiser with a diagram.
- Q.16 Classify compressors.
- Q.17 Derive an expression for specific heats and give the relation between them.
- Q.18 Define steady flow energy equation. Give its limitations.
- Q.19 Explain P-V-T surface of an ideal gas.
- Q.20 Define characteristic gas constant and give its derivation.

(3) 221733/181732/121732
/031732/094834/117232
/171743/030434/452

- Q.21 One kg of a steam is at a pressure of 10 bar, with dryness fraction 0.9 Calculate its enthalpy.
- Q.22 Explain the concept of irreversibility and entropy.

SECTION-D

- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x8=16)
- Q.23 Explain the working of Lancashire boiler with the help of a neat diagram.
- Q.24 A gas occupies a volume 0.1 cubic meter at a temperature 25°C and a pressure of 1.5 bar. Find the final temperature of the gas. If it is compressed to a pressure of 7.5 bar and occupies a volume of 0.05 cubic meter.
- Q.25 Give at least eight differences between reciprocating and rotary compressors.

(2320)

(4) 221733/181732/121732
/031732/094834/117232
/171743/030434/452

No. of Printed Pages : 4

221732/181734/171734

Roll No.

/121734/031734/030133

3rd Sem / Mechanical Engg, Mechanical(Tool & Die Design)Agri, Prod, CNC, CAD/CAM, GE, Metallurgy, Pack. Tech, Print Making Tech., Mech (Ad. Manu. Tech.), Mech Engg (Fabrication Tech)

Subject : Mechanical Engineering Drawings - II / Mechanical Engineering Drawing / Machine Drawing

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 What is the purpose of LIMITS in production parts?

- a) To ensure a perfect fit in all the size cases
- b) To allow for variation in assembled part dimensions
- c) To specify the exact size of a part
- d) To set an upper size boundation of the part.

Q.2 Which type of motion is easily transmitted through universal coupling?

- a) Axial motion
- b) Rotational motion
- c) Axial and rotational motion
- d) It cannot transmit any type of motion

(1) 221732/181734/171734

/121734/031734/030133

- Q.3 A tolerance of ± 0.05 mm means that
- a) The dimension can vary upto 0.05 mm in a job
 - b) The dimension can vary upto 0.10 mm in a job
 - c) The dimension can vary between + 0.05 mm to -0.05 mm in a job
 - d) Both b and c
- Q.4 Which of the following is not a part of nomenclature of gear?
- a) Involute profile
 - b) Addendum
 - c) Pitch circle
 - d) Dedendum
- Q.5 In a shaft-hole system, which fit has shaft size greater than the hole size?
- a) Force fit
 - b) Clearance fit
 - c) Interference fit
 - d) Running fit
- Q.6 A circle will appear as _____ on an isometric drawing.
- a) Ellipse
 - b) Cycloid
 - c) Circle
 - d) Parabola

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 In _____ fit, the smallest shaft is always larger than the largest hole.
- Q.8 _____ coupling has shafts at parallel axis offset.
- Q.9 _____ gears have teeth at angles to the axis of rotation.
- Q.10 Function of flywheel is to _____

(2) 221732/181734/171734
/121734/031734/030133

Q.11 Material of balls in ball bearings is _____.

Q.12 Define Bilateral Tolerance.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain various types of fits with diagram.

Q.14 Enlist the various parts of screw jack and give their function & respective materials.

Q.15 Draw a free hand front view of Universal coupling.

Q.16 Explain the function of bearing and how roller bearing achieves its purpose?

Q.17 What is the purpose of bushes in bushed bearing, give their material and the function of oil bushes.

Q.18 Draw a free hand front view of a Piston giving its material.

Q.19 What is a crank shaft? Give its material and the method of manufacturing it.

Q.20 What is the use of steam stop valve & Blow off cock.

Q.21 Draw free hand sketch of one view of a typical wall bracket.

Q.22 Explain the working of expansion joint, its parts and their materials with a diagram.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

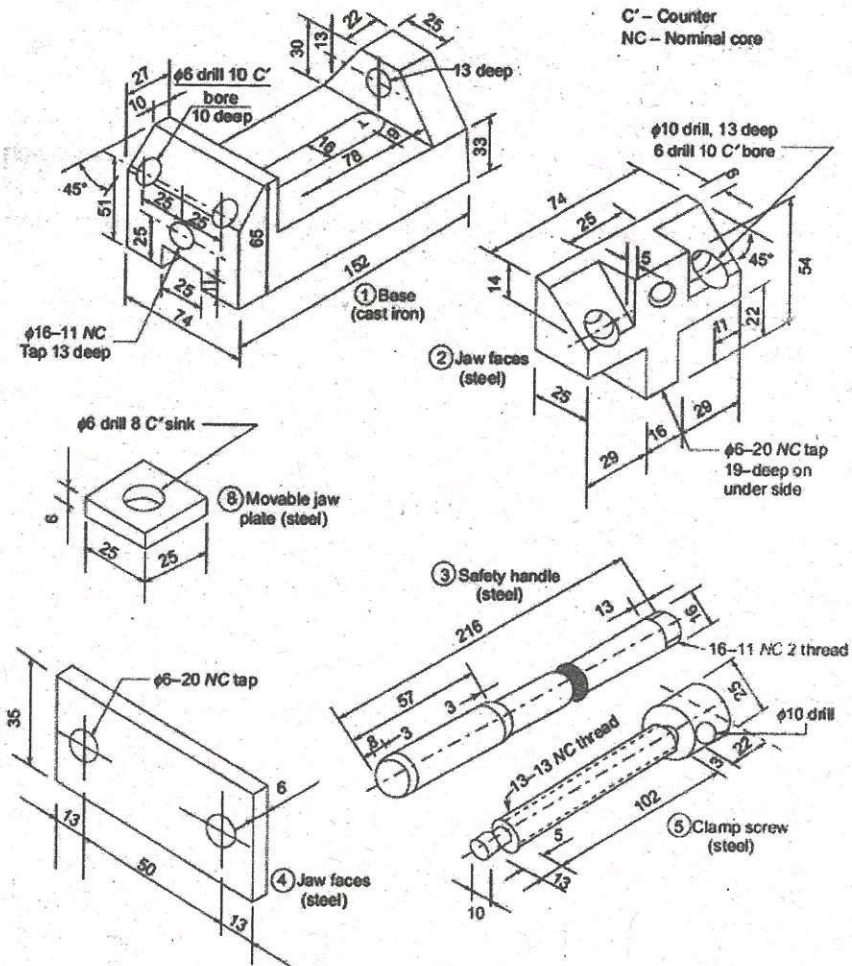
Q.23 Draw two free hand views of Flanges pipe joint assembly.

Q.24 Classify various pipe joints and draw their symbols.

(3) 221732/181734/171734
/121734/031734/030133

Q.25 Assemble the drill machine vice as shown in figure below and draw

- a) elevation b) Plan view
c) Bill of material



- Dimension units may be taken in mm.
- Assume suitable dimensions are required if not specified or not visible clearly in the figure.

(4320)

(4) 221732/181734/171734
/121734/031734/030133

No. of Printed Pages : 4

220335/180136/170336

Roll No.

/120136/030136/030423

**3rd Sem / Automobile, Mechanical Engg, Mechanical
(Tool & Die Design), Agri, Chem, P&P, Civil, Plastic,
Prod, CNC, CAD/CAM, Found. & Forg, Metallurgy ,
Print Making Tech., Mech (Ad Manu.Tech.) Mech.
Engg(Fabrication Tech). Mech. Engg .(Prod.)**

**Subject : Basics of Electrical and Electronics
Engineering**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Unit of Voltage is (CO1)

- | | |
|---------|-----------|
| a) Ohm | b) Ampere |
| c) Volt | d) Second |

Q.2 Frequency of a.c. supply in INDIA is (CO1)

- | | |
|----------|----------|
| a) 50 Hz | b) 60Hz |
| c) 0 Hz | d) 20 Hz |

Q.3 MCB is used for protection against (CO6)

- | | |
|--------------------|----------------|
| a) Leakage current | b) Earth fault |
| c) High current | d) Lightning |

(1) 220335/180136/170336

/120136/030136/030423

Q.4 Need of starter to start motor is to (CO5)

- a) Provide starting torque
- b) Limit circulating current
- c) Limit starting current
- d) None

Q.5 Diode is used to (CO7)

- a) Convert a.c. into d.c.
- b) Convert d.c. into a.c.
- c) Amplify given signal
- d) Control electric drive

Q.6 In star connection (CO1)

- a) $V_L = V_{ph}$
- b) $V_L = \sqrt{3}V_{ph}$
- c) $V_L = V_{ph}/\sqrt{3}$
- d) $3V_L = V_{ph}$

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define Time period (CO1)

Q.8 Write full form of ELCB (CO6)

Q.9 Define Average value of AC

(2) 220335/180136/170336
/120136/030136/030423

- Q.10 Resistance of conductor depends directly on length
(T/F) (CO1)
- Q.11 Instrument used to measure electrical energy is
(CO1)
- Q.12 Transformation ratio is given by _____ (CO3)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 State Fleming's left hand rule (CO3)
- Q.14 Write differences between a.c. and d.c. (CO2)
- Q.15 Draw the circuit diagram of delta connection and write the voltage and current relationship. (CO5)
- Q.16 Draw circuit showing connection of voltmeter, ammeter and wattmeter to measure voltage, current and power across load resistance R_L . (CO1)
- Q.17 Write working principle of transformer. (CO3)
- Q.18 Give the comparison between A.C and D.C motor. (CO1)
- Q.19 What are the precautions to be taken for prevention of electric shock. (CO6)
- Q.20 Explain P type semiconductor. (CO7)
- Q.21 Write applications of electricity. (CO1)

Q.22 Explain colour coding of electrical wires. (CO6)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Draw and explain the connection of DOL starter for starting 3 phase induction motor (CO5)

Q.24 What is the purpose of earthing? With the help of neat sketch explain the pipe type earthing. (CO6)

Q.25 Draw the constructional details of transformer and label all its parts. Also, write function of each part. (CO3)

**3rd Sem / Automobile, Mechanical Engg., Mechanical
(Tool & Die Design)**

Subject : Workshop Technology - II

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Spatter occur due to

- | | |
|-------------|----------------------|
| a) Arc blow | b) Gas entrapment |
| c) Stresses | d) None of the above |

Q.2 A fixture is a device

- a) Which holds and located the work piece and guides the cutting tool.
- b) Which holds and positions the work, but does not in itself guide, location or position the work piece.
- c) Which is not fixed to machine table.
- d) None of the above

Q.3 Chaplets are made by

- a) Core sand
- b) Wood
- c) Metals
- d) Silica

Q.4 Under cutting in a weld appears due to

- a) Non-uniform heating
- b) Non-uniform feeding of electrode
- c) Presence of moisture
- d) None of the above

Q.5 Shaper uses a

- a) Single point cutting tool
- b) Multi point cutting tool
- c) Rotatory tool
- d) None of the above

Q.6 Green sand is a mixture of

- a) 30% sand and 70% clay
- b) 50% sand and 50% clay
- c) 70% sand and 30% clay
- d) 90% sand and 10% clay

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 The loam sand containing _____ % clay.
- Q.8 The portion of broach which enters the hole before the teeth start cutting is called _____
- Q.9 The vertical passage through which molten metal flows down from a pouring basin to the parting plane is called _____.
- Q.10 Plain milling cutter is also known as _____.
- Q.11 Lower part in moulding box is called _____.
- Q.12 When two or milling cutters are mounted on the arbor so that each cutter produces its own distinctive surface as the work piece is fed to it is called _____

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Write a brief note on facing sand.
- Q.14 Write the difference between pull and push broach.
- Q.15 Explain Principle of Jigs and fixture design.
- Q.16 What should be the properties of materials which are used for pattern making?

- Q.17 Explain different types of broach tools.
- Q.18 Name the elements of jig/fixture.
- Q.19 Explain any two properties of moulding sand.
- Q.20 Write any five difference between shaper and planer.
- Q.21 Write the working principle of shaper.
- Q.22 Differentiate between up and down milling.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 What is resistance welding? Explain its principle.
- Q.24 Explain locating devices used in jigs.
- Q.25 Explain cold chamber die casting machine with a neat sketch.

4th Sem / Agri, Arch, Auto, Ceramic, Chemical, Chemical (P&P), Civil, Computer, Electrical, ECE, Food Tech, IC, LIS, Mech Engg., Mech (Tool & Die), DMLT, Plastic Tech, Textile Design, Textile Processing, Textile Tech, Automation & Robotics, Fashion Tech, OMCA, Fashion Design, Medical Electronics, DMLT (For Speech and Hearing Impaired), Artificial Intelligence & Machine Learning, Hotel Management & Catering Tech, ECE (For Speech and Hearing Impaired), FAA, DBM Marketing, DBM Retail, DBM HRM, Computer (For Speech and Hearing Impaired)

Subject : English and Communication Skills - II

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Who had agreed to stake his freedom in 'The Bet'?

- | | |
|---------------|------------------|
| a) the banker | b) the guest |
| c) the lawyer | d) none of these |

Q.2 Who is the author of 'The Portrait of a Lady'?

- | | |
|-----------------|--------------------|
| a) Ruskin Bond | b) Khushwant Singh |
| c) Vikram Bhatt | d) Anton Chekhov |

Q.3 _____ is a word used before a noun or pronoun to show its relation with the other words of the sentence.

- | | |
|----------------|----------------|
| a) Conjunction | b) Preposition |
| c) Verb | d) Adjective |

Q.4 Full form of E-mail is

- | | |
|--------------------|------------------|
| a) Electric Mail | b) Easy Mail |
| c) Electronic Mail | d) Elective Mail |

Q.5 Non-verbal signs can be

- | | |
|----------------|---------------------|
| a) eye contact | b) Open arms |
| c) Nodding | d) all of the above |

Q.6 The word punctuation is derived from:

- | | |
|----------|------------|
| a) Greek | b) English |
| c) Latin | d) French |

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Kiran Bedi, Ph.D., is India's first and highest ranking (retired in 2007) woman officer who joined the Indian Police service in 1972. Her experience and expertise include more than 35 years of tough, innovative and welfare policing. She has worked with the United Nations as the police Advisor to the Secretary General, in the Department of Peace Keeping Operations. Recipient prestigious Ramon Magsaysay Award (also called the Asian Nobel Prize), and several other decorations, she is a sought after speaker on social, professional and leadership issues. Kiran Bedi has been voted as India's most admired woman and fifth amongst all Indians. The same held true in IIM Indore, when, as she walked into the seminar hall, the entire audience stood as one to applaud her and just as quickly quietened down when she stepped up to speak.

Q.7 In which year Dr Kiran Bedi joined the Indian Police Service?

- Q.8 On which post Kiran Bedi worked with the United Nations?
- Q.9 Which prestigious award was honoured to Kiran Bedi?
- Q.10 What happened when Kiran Bedi walked into seminar hall?
- Q.11 Write the synonyms for these words:-
a) Innovative b) Prestigious
- Q.12 Write the antonyms for these words:-
a) Tough b) Prevention

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Write any four basic steps of note taking.
- Q.14 Write a short note on importance of corrigendum writing.
- Q.15 Fill in the blanks with appropriate prepositions:-
a) He was arrested _____ police.
b) The police beat the thief _____ a cane.
c) The aeroplane crashed _____ the sea.
d) He has no love _____ music.
- Q.16 Translate the following administrative and technical terms in Hindi.
a) Income Tax b) Flying Squad
c) Data d) Chief Justice
- Q.17 Write appropriate sentences using the idioms and phrases:
a) In black and white b) A shark
c) To hold one's tongue d) A burning question

Q.18 Use the following pair of words in appropriate sentences:

- a) Canvas, Canvass b) Lesson, Lessen
- c) Plain, Plan d) Principal, principle

Q.19 Write a general office memo on inappropriate use of time.

Q.20 Fill in the blanks with suitable conjunctions.

- a) We ran fast _____ we missed the train
- b) You will get the prize _____ you deserve it.
- c) _____ you work hard, you will not pass.
- d) I will dismiss you _____ you are late again.

Q.21 What is the significance of the title 'The Doctor's word'?

Q.22 List any four barriers to Effective listening.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Discuss the various modern forms of communication.

Q.24 Write a letter placing an order of college books and other motivational books for the college library. You are the librarian at Govt. Polytechnique college.

Q.25 Write a case study on 'Why do students bunk classes'?

4th Sem / Automobile, Mechanical, Mech(Tool & Die)

Subject : Materials and Metallurgy

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which of the following is an alloy.

- a) cast iron b) steel
- c) brass d) all of above

Q.2 In H.C.P. structure, the number of atoms in a unit cell are

- a) 1 b) 2
- c) 4 d) 6

Q.3 Plastic deformation may take place due to

- a) slip only b) twinning only
- c) slip or twinning d) none of them

- Q.4 Pearlite is a combination of
- a) Ferrite & Iron graphite
 - b) Ferrite & Austenite
 - c) Ferrite & Cementite
 - d) None of the above
- Q.5 Which of the following is/are Point defects?
- a) Schottky defect b) Vacancy defect
 - c) Substitutional defect d) All of these
- Q.6 The ability of a material to resist fracture due to high impact load is:
- a) Toughness b) Hardness
 - c) Brittleness d) Malleability

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 HSS stands for _____
- Q.8 The line above which the alloy is liquid is called _____
- Q.9 Define ferrous metals.
- Q.10 _____ Carbon steel contains carbon 0.3% to 0.8%.

Q.11 Define Refractory material.

Q.12 Define atomic radius.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Differentiate between slip and twinning.

Q.14 Give the classifications of materials.

Q.15 What are semi-conducting materials? What are its different types?

Q.16 What is a refractory material? What are its different types? Explain.

Q.17 What are line defects? What its types? Explain.

Q.18 Explain any four mechanical properties of materials.

Q.19 What is pyrometer? What are its different types.

Q.20 Differentiate between ferrous and non-ferrous metals.

Q.21 Explain T.T.T diagram.

Q.22 Write short note on Cyaniding.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain briefly the effect of crystal defect on material.
- Q.24 Explain the various types of cast iron with uses & properties.
- Q.25 What is heat treatment furnace? What are its different types? Explain any two.

4th Sem / Mechanical, Mech(Tool & Die)

Subject : Hydraulics and Pneumatics

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 An ideal fluid is a fluid which is (CO1)
- a) Compressible
 - b) Incompressible
 - c) Imcompressible and Viscous
 - d) None of the above
- Q.2 The Specific volume of a liquid is a reciprocal of (CO2)
- a) Weight density b) Mass density
 - c) Specific weight d) Specific volume
- Q.3 Manometer is used for measuring (CO3)
- a) Only high pressure
 - b) Only low pressure
 - c) Both high and low pressure
 - d) Only negative pressure

Q.12 Hydraulic press is the practical application of _____ law. (CO6)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain surface tension and capillarity. (CO1)

Q.14 State newton's law of viscosity. (CO1)

Q.15 If the specific gravity of a liquid is 13.6, find its mass density and weight density. (CO2)

Q.16 Write a short note on compressibility. (CO2)

Q.17 Explain gauge pressure and absolute pressure. (CO3)

Q.18 Enlist various faults in hydraulic systems.

Q.19 Explain pitot tube with the help of neat sketch. (CO4)

Q.20 Explain loss of head of exit of pipe. (CO5)

Q.21 Derive an expression for the velocity of flow through nozzle. (CO5)

Q.22 What is single acting air compressor? Explain with the help of neat sketch.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Derive an expression for discharge measured by orifice meter. (CO4)

Q.24 Explain with neat sketch, construction and working of kaplan turbine. (CO5)

Q.25 What is hydraulic ram? Explain its construction and working with the help of neat sketch. (CO6)

4th Sem / Mechanical, Mech (Tool & Die)

Subject : Workshop Technology - III

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 In an oil paint, Turpentine oil is used as a

- | | |
|------------|------------|
| a) Base | b) Vehicle |
| c) Pigment | d) Solvent |

Q.2 EDM is also known as the

- | | |
|--------------------|------------------|
| a) Spark corrosion | b) Spark erosion |
| c) Spark | d) None of them |

Q.3 The value of pressure angle in gear

- | | |
|-------|-------|
| a) 15 | b) 20 |
| c) 25 | d) 10 |

Q.4 The material used for the body of lap

- | | |
|-------------------|---------------------|
| a) Lead | b) Copper |
| c) soft cast iron | d) all of the above |

- Q.5 What does the term 'grade refer' to in a grinding wheel.
- a) The size of the abrasive grains
 - b) The hardness of the abrasive grains
 - c) The strength of the bond holding the grains
 - d) The hardness of the bond holding the grains
- Q.6 What is the operation of cutting a flat sheet to a desired shape called.
- a) Shearing
 - b) trimming
 - c) shaving
 - d) blanking

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Expand WJM
- Q.8 Write full form of LASER
- Q.9 Define Dedendum circle.
- Q.10 What is buffing.
- Q.11 Name any two artificial abrasives.
- Q.12 Define stamping.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain the principle of EDM.

- Q.14 Write a short note on wire gun method.
- Q.15 What are the different types of rolling Mills. Explain any one.
- Q.16 Describe the process of hand honing.
- Q.17 Explain the meaning and grade of letters used in grinding wheels.
- Q.18 What is closed die forging with examples.
- Q.19 Define center less grinding with its principle.
- Q.20 Write the four application of ECM.
- Q.21 Explain Punching & Notching.
- Q.22 Explain Electroplating.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the various methods of gear manufacturing.
- Q.24 a) What is the difference between open die forging and closed die forging.
- b) Explain USM.
- Q.25 Explain honing and lapping process and its applications in brief.

No. of Printed Pages : 4
Roll No.

221745

4th Sem / Mechanical Engg.

Subject : Machine Design

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 In machine design, which of the following joins two rotating shafts to each other?

- | | |
|---------|---------------|
| a) Key | b) Coupling |
| c) Gear | d) Belt drive |

Q.2 The centre to centre distance between two consecutive rivets in a row is called _____

- | | |
|---------------|-------------------|
| a) Margin | b) Pitch |
| c) Back Pitch | d) Diagonal Pitch |

Q.3 Resistance to fatigue of a material is measured by

- | | |
|------------------|--------------------|
| a) Elastic limit | b) Young's modulus |
| c) Bulk modulus | d) Endurance limit |

- Q.4 Maximum shear stress theory is mostly used for
- a) Ductile material b) Brittle material
 - c) Hard material d) Tough material
- Q.5 Material used for high strength shaft is
- a) Nickel steel
 - b) Chrome vanadium steel
 - c) Nickel chromium steel
 - d) Any of the above
- Q.6 In a flange coupling the weakest link should be
- a) Flange b) Key
 - c) Bolt bush d) Shaft

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Name any two rivet materials.
- Q.8 Define fatigue.
- Q.9 Draw the symbol of butt joint.
- Q.10 The end of rod which is inserted into a socket is known as _____

Q.11 Give two applications of springs.

Q.12 What is the material of key.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Write the advantage and disadvantages of screw joints.

Q.14 Classify the various types of springs with their applications.

Q.15 What do you mean by SN curve? Give its significance in design.

Q.16 Define key. Write the classification of keys.

Q.17 Explain the processes to make the riveted joint leak proof.

Q.18 Describe various types of designs.

Q.19 Write short note on maximum stress theory.

Q.20 Give the name of parts of screw jack with their materials.

Q.21 Draw a screw thread, explaining its terminology.

Q.22 Explain the procedure of design of single rivet lap joint.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 A solid circular shaft is subjected to a bending moment of 3000 N-m and a torque of 10000 N-m. The shaft is made of 45C8 steel having ultimate tensile stress of 700 MPA and an Ultimate shear stress of 500 Mpa. Assuming a factor of safety as 6, determine the diameter of shaft. Consider both of the theories.
- Q.24 A rectangular sunk 16mm wide x 12mm thick x 80 mm long key is used to transmit a torque of 25 kN-m from a 100 mm diameter shaft. Calculate the induced shear and crushing stress in the key.
- Q.25 Explain the following :
- Classify various types of joints
 - What is shaft coupling? What are its different types?

No. of Printed Pages : 4
Roll No.

221746

4th Sem / Mechanical Engg.

Subject : Thermodynamics - II

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Crank case ventilation is the process of removing

- a) Water vapours b) Fuel vapours
- c) Combustion gases d) None of the above

Q.2 In a diesel engine, thermal efficiency lies in the range of

- a) 30-35% b) 15-20%
- c) 10-15% d) 80%

Q.3 The air fuel ratio required for idling is

- a) 10:1 b) 10:1 to 11:0
- c) 12.5:1 to 13.5:1 d) 16.5:1 to 17.5:1

Q.4 In plunger type fuel injection pump, plunger is operated by

- a) Belt drive
- b) Gear drive
- c) cam and tappet mechanism
- d) none of above

Q.5 An engine indicator is used to find

- a) B.P.
- b) I.P.
- c) Volume
- d) temperature

Q.6 The ram jet engine has

- a) single compressor unit
- b) double compressor unit
- c) no compressor unit
- d) either (a) and (b)

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 A gas turbine is an I.C. engine. (True/False)

Q.8 Define condenser efficiency.

Q.9 Write two applications of steam nozzles.

Q.10 Give two alternative fuels for I.C. engine.

Q.11 Expand MPFI.

Q.12 What is air-fuel ratio?

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain closed cycle constant pressure gas turbine.

Q.14 What is jet condenser, explain any one type of them.

Q.15 Write the working principle of impulse steam turbine.

Q.16 Explain the PV and TS diagram for the Diesel cycle.

Q.17 What is the various function of lubrication.

Q.18 What is the function of nozzle, explain multi-hole nozzle.

Q.19 What is battery ignition system? Explain

Q.20 Explain the factors which affect carburetion.

Q.21 Explain any one commercial tests of IC engine.

Q.22 What is turbo-jet engine with its principle.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 What is cooling system? Explain in details the type of cooling system with diagram and application.

Q.24 a) Write a short note on governing of steam turbine.

b) What is the working of turbocharger?

Q.25 What is carburetor? Explain in details the working of Solex carburetor.

No. of Printed Pages : 4
Roll No.

221751

**5th Sem/
Mechanical Engg., Mechanical (Tool & Die)
Subject : CNC Machines & Automation**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 What does PLC stand for?
- a) Process Logic Controller
 - b) Programmable Logic Controller
 - c) Programmed Linear Code
 - d) Power Line Control
- Q.2 Which of the following is an example of a motion system in CNC?
- a) Encoder
 - b) Servo motor
 - c) Transducer
 - d) Trachometer
- Q.3 What is the purpose of a part program in CNC?
- a) To store electrical signals
 - b) To control tool movement
 - c) To lubricate components
 - d) To increase spindle speed

- Q.4 Which type of actuator is commonly used in CNC machines?
- a) Pneumatic
 - b) Hydraulic
 - c) Electric
 - d) All of the above
- Q.5 What is the primary function of a coordinate measuring machine (CMM)?
- a) Measure dimensions
 - b) Cut metal
 - c) Cool the system
 - d) Provide power supply
- Q.6 What is an advantage of Direct Numerical Control (DNC)?
- a) Limited storage
 - b) Centralized Control
 - c) Increased manual effort
 - d) Slower operation

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Define the term "adaptive control" in CNC machines.
- Q.8 NC machines use binary coding for operation. (True/False)
- Q.9 Name two types of cutting tools used in CNC machining.

- Q.10 _____ is the main advantage of using automation in manufacturing.
- Q.11 What is the role of AGV in flexible manufacturing systems?
- Q.12 Automated inspection improves product quality in CNC manufacturing. (True/False)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain the working principle of a servo motor in CNC machines.
- Q.14 What are the advantages of different types of CNC controllers?
- Q.15 Discuss the role of sensors in feedback control of CNC machines.
- Q.16 What are the different types of automation systems used in industries?
- Q.17 Explain the function of tool magazines used in CNC machines.
- Q.18 How does a PLC function in CNC operations?
- Q.19 Describe the use of Robotics in modern CNC manufacturing.
- Q.20 Explain any four G codes.
- Q.21 What are the common faults in CNC machines and their solutions?
- Q.22 Discuss the role of AI in manufacturing automation.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the classification of NC systems based on motion and feedback systems.
- Q.24 Discuss the applications of Flexible Manufacturing Systems (FMS)) in modern industries.
- Q.25 Write a finishing cut program of step turning as shown in fig. 1. All dimensions are in mm.

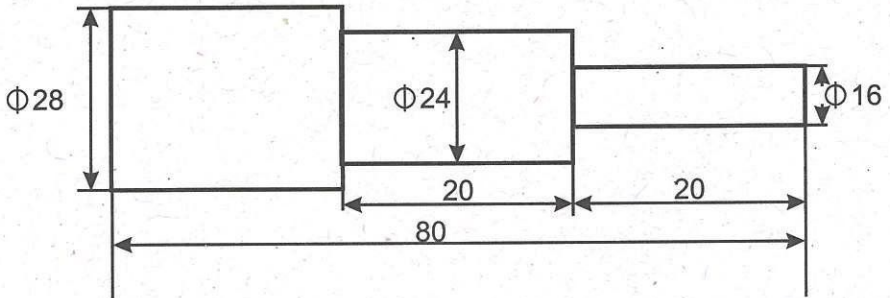


Fig. 1

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 COP of heat pump is _____ than that of Refrigerator.
a) Less b) More
c) Equal d) None of the above
- Q.2 One Ton of refrigeration is equal to :
a) 3.5 KW b) 6.5 KW
c) 5.5 KW d) 2.5 KW
- Q.3 Which of the following is Halo-Carbon refrigerant?
a) R-11 b) R-500
c) R-718 d) R-170
- Q.4 Effect of superheating of vapour is :
a) High COP b) Low COP
c) Same COP d) None of the above
- Q.5 For saturated air :
a) Wet bulb depression is zero
b) Wet bulb depression is positive

- c) Wet bulb depression is negative
- d) Web bulb depression can either be positive or negative

Q.6 Air refrigeration cycle is used in _____.

- a) Commercial refrigerators
- b) Domestic refrigerators
- c) Gas liquification
- d) Air conditioning

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 The value of COP should be greater than _____.

Q.8 An ideal refrigerant should have high boiling point. (True/False)

Q.9 Air without moisture content is called _____.

Q.10 Define sensible heating.

Q.11 The part of refrigeration system, where actual cooling takes place is called _____.

Q.12 Define refrigeration effect.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain Liquid nitrogen refrigeration.

- Q.14 Draw proper T-S and p-h diagrams of simple Vapour Compression Refrigeration Cycle.
- Q.15 Explain Sensible Heating and Humidification processes.
- Q.16 Write a short note on horizontal scaled reciprocating compressor.
- Q.17 Define 1) Halo-carbon compounds
2) Azeotropes
- Q.18 Explain By pass Factor.
- Q.19 Explain thermostatic expansion valve.
- Q.20 Mention the safety devices used in refrigeration system. Explain any one of them.
- Q.21 Explain Reverse Carnot Cycle.
- Q.22 Mention the advantages and disadvantages of Air-Cooled condensers.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the following air conditioning terms:
- a) Latent heat
 - b) Wet bulb temperature
 - c) Degree of saturation
 - d) Dew Point temperature
- Q.24 Write down the properties of following refrigerants:
- a) R-717
 - b) R-22
- Q.25 Explain Auto Defrosting. Write its advantages and disadvantages.

**5th Sem/
Branch : Mechanical Engg.
Subject : Theory of Machines**

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 A simple mechanism has _____

- | | |
|------------|------------|
| a) 4 links | b) 1 links |
| c) 3 links | d) 2 links |

Q.2 A ball and a socket forms a

- | | |
|-----------------|-------------------|
| a) Turning pair | b) Screw pair |
| c) Rolling Pair | d) Spherical pair |

Q.3 Which one of the following is a Dead weight type governor?

- a) Porter Governor
- b) Wilson-Hartnell Governor
- c) Hartnell Governor
- d) Hartung Governor

Q.4 In a cam-follower mechanism, the follower motion is controlled by the :

- a) Shape of the follower
- b) Speed of cam
- c) Shape of cam
- d) Mass of the follower

Q.5 The gear train usually employed in clocks is:

- a) Reverted gear train
- b) Simple gear train
- c) Sun & planet gear train
- d) Differential gear train

Q.6 In balancing of single-cylinder engine, the rotating unbalance is _____

- a) Completely made zero and so also the reciprocating unbalance
- b) Completely made zero and the reciprocating unbalance is partially reduced
- c) Partially reduced and the reciprocating unbalance is completely made zero
- d) Partially reduced and so also the reciprocating unbalance

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 What is initial tension in belt?
- Q.8 Define dynamic balancing.
- Q.9 Define hunting in governor.
- Q.10 What is crowning in pulley?
- Q.11 What is diametral pitch?
- Q.12 What is slip in a belt drive?

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Classify chain drive.
- Q.14 Explain the working of porter governor.
- Q.15 Differentiate between fly wheel and governor.
- Q.16 Explain compound gear train.
- Q.17 Explain fast and loose pulley.
- Q.18 Draw the turning moment diagram for single acting and double acting steam engine.
- Q.19 Obtain an expression of ratio of belts in flat belt drive.
- Q.20 Explain the terminology of cam profile.
- Q.21 Differentiate between machine and mechanism.
- Q.22 Explain the importance of balancing in machines.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain single slider crank chain mechanisms in detail. Explain its inversions.
- Q.24 What are causes of vibration in machines? What are their remedial measures? Also explain their harmful effects.
- Q.25 A cam is to give the following motion to a knife edged follower:
- Out stroke 60° of cam rotation with uniform velocity
 - Dwell for 30° .
 - Return stroke 60° with uniform velocity.
 - Dwell for remaining 210° . Stroke of follower is 40mm and minimum radius of cam is 50 mm. Draw the cam profile, when the axis of follower passes through the axis of cam shaft.

No. of Printed Pages : 4

220261/212862

Roll No.

6th Sem/

Arch, Auto, Chem, Chem (P&P), Comp, Elect, ECE,
Food Tech, Arch (For Speech & Hearing Impaired), Mech,
Textile Design, Textile Processing, Textile Tech, Automation
& Robotics, Fashion Tech, Fashion Design, ECE (For Speech &
Hearing Impaired) Comp (For speech and hearing impaired)
Sub. : Entrepreneurship Development & Management

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 In which of the following Decision making is involved?

- a) Planning b) Controlling
- c) Organizing d) All of the above

Q.2 Which of the following is a salient feature of a sole proprietorship?

- a) Single ownership b) One man control
- c) Partnership d) Both (a) and (b)

Q.3 A detailed project report consists of _____.

- a) Cost of project b) Market report
- c) Promoter's profiles d) All of the above

- Q.4 Which of the following industry belongs to servicing sector?
- a) Banking b) Hospitality
 - c) E-Commerce d) All of the above
- Q.5 Which of the following is not a characteristic of effective coordination?
- a) Centralized decision-making
 - b) Mutual trust
 - c) Common goals
 - d) Clear communication
- Q.6 Which of the following is a type of leadership?
- a) Authoritarian b) Laissez-faire
 - c) Democratic d) All of the above

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Write one feature of a startup.
- Q.8 Write full form of KVIC.
- Q.9 Who is known as father of scientific management?
- Q.10 List any one feature of planning.
- Q.11 Define placement.
- Q.12 List one benefit of market survey.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Explain Autocratic leadership.
- Q.14 Discuss various methods of Training.
- Q.15 Differentiate between Planning & Forecasting.
- Q.16 "Proper Staffing Can be a boon for your Enterprise" comment.
- Q.17 Explain advantages of planning.
- Q.18 Mention any two problems faced by management during controlling.
- Q.19 What are the skills required for a good leadership?
- Q.20 State the importance of conducting right Market survey at right time.
- Q.21 What are the functions of Top-level management?
- Q.22 Explain the advantages of NABARD.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Discuss step by step method of preparing a project report.

Q.24 In context of Entrepreneur explain the following:

- a) Skills required for becoming an Entrepreneur
- b) Different types of Entrepreneurs

Q.25 Explain the different levels of Management structure in detail.

6th Sem/ Mechanical Engineering
Subject : Automobile Engineering

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Automobile can be classified based on which of the following parameter?

- a) Fuel used b) Transmission
- c) Drive d) All of the mentioned

Q.2 Which of these were or are used in automobiles to provide suspension.

- a) Coil springs b) Torsion bars
- c) Leaf springs d) All of the mentioned

Q.3 What is the function of the alternator?

- a) Recharging the Battery
- b) Voltage Regulator
- c) Auto-Ignition
- d) None of the above

- Q.4 Leaf spring absorbs shock by
- a) Expanding b) Bending
 - c) Compression d) Twisting
- Q.5 What is the speed ratio of top shift position of gear box
- a) 3.589 b) 2.166
 - c) 0.999 d) None of the above
- Q.6 In air brake air pressure is applied by
- a) The engine manifold
 - b) A compressor
 - c) The diaphragm valve
 - d) A condenser

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Define Toe-Out. (CO3)
- Q.8 Name various passenger safety devices used in automobile vehicles. (CO3)
- Q.9 Expand ABS. (CO4)
- Q.10 ADAS stands for _____. (CO7)
- Q.11 What is regenerative braking system? (CO4)
- Q.12 What is rear wheel drive? (CO2)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 What is Automatic transmission system write its advantages in automobile. (CO2)
- Q.14 Explain the construction and working of Multi-Plate clutch. (CO2)
- Q.15 Explain wheel Balancing & Alignment.
- Q.16 Write the classification of Automobile. (CO1)
- Q.17 Differentiate between pure electric vehicle and hybrid vehicle. (CO7)
- Q.18 Write the explain the different types of rear axle. (CO2)
- Q.19 What are requirements of good braking system? (CO4)
- Q.20 Write the advantages of coil spring over leaf spring in suspension system. (CO3)
- Q.21 Write the various functions of battery in automobile. (CO5)
- Q.22 Explain Ackerman steering mechanism with the help of neat sketch. (CO3)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain the construction and working of vacuum brakes. (CO4)
- Q.24 What is Dynamo. Give its principle, construction and working in detail. (CO7)
- Q.25 Explain the construction and working of Sliding mesh gear box. (CO2)