J & K BOARD OF TECHNICAL EDUCATION

SEMESTER: 1ˢᵗ

MAX.MARKS: 100

BRANCHES : All

SCHEME: New

TIME ALLOWED: 03 Hrs

SUBJECT: Applied mathematics-1

Note:

I. There are THREE sections in the paper A, B, and C.

II. Answer all the 10 parts of the question in Section –A. Each part carries Two mark and all the 10 parts have objective type questions.

III. Answer any Four questions out of Eight questions in Section –B . Each question carries 5 marks.

IV. Answer any 4 questions out of 8 questions in Section –C . Each question carries 15 marks.

SECTION A

Q.1 2

I. $1+i+i^2+i^3$ is equal to

a) i b) 0.   c) $-i$ d) 1

II. the value of Sin765° is equal to 2

a) 1   b) $\frac{1}{\sqrt{2}}$ c) $-\frac{1}{\sqrt{2}}$ d) None of these

III. The third term of a G.P is 4 .Find the product of its first five five terms is 2

a) 1023   b) 1024   c) 1033   d) none of these

IV. $\lim_{n\to\infty} \left(1+\frac{1}{n}\right)^n = e$ is equal to 2

a) 1   b) -1   c) 2   d) none of these

V. What is the equation of the tangent at a specific point of $y^2 = 4ax$ at (0, 0)? 2

a) x = 0   b) x = 1   c) x = 2   d) x = 3

VI. $\frac{d(logx)}{dx}$ is 2

a) logx   b) tanx   c) $\frac{1}{x}$ d) none of these

VII. Value of 7_{c_7} is equal to 2

a) 10   b) 12   c) 1   d) None of these

VIII. The coefficient of the middle term in the expansion of $(2+3x)^4$ is: 2

a) 5!   b) 6   c) 216   d) 8!

IX. Tan15° is equal to

a) $2-\sqrt{3}$ b) $2+\sqrt{3}$ c) $1-\sqrt{3}$ d) 7 2

X. The slope of a normal to the curve $y= 3x^2$ at point (2 ,0) is

a) 12   b) -12   c) $-\frac{1}{2}$ d) $-\frac{1}{2}$ 2

(11) $\tan 60 \cdot$ equal to

a) $\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) 0   d $\frac{1}{\sqrt{2}}$

Q. Explain $\frac{+}{1}\frac{+1}{=1}$ im dron of

SECTION B

Do any Four Questions

1. Find n if $n_{C_8} = n_{C_9}$ — 5
2. Using Binomal Theorem evaluate $(95)^5$ — 5
3. In a G.P ,the 3rd term is 24 and 6th term is 192 . Find the 10th term — 5
4. Evaluate — 5

$$\lim_{x \to 0} \frac{\sqrt{1+x} - 1}{x}$$

5. Differentiate $Sin^2(\theta^2 + 1)$ w.r.t θ^2 — 5
6. Evaluate $\tan(\frac{13\pi}{12})$ — 5
7. Sum the series $\frac{3}{2} - 2 + \frac{8}{3} - .$ .... to 6 terms . — 5
8. Find the equation of tangent to the curve $y^2 = 16x$ at(4, 8). — 5

SECTION C

Do any Four Questions

1. Prove that $Cos20° \ Cos40° \ Cos60° \ Cos80 = \frac{1}{16}$ — 15
2. Evaluate $\lim_{x \to 0} \frac{1-Cos4x}{1-Cos2x}$ — 15
3. If $ax^3 + by^{-2} + 2hxy + 4gx + 5fy + c = 0$ Find $\frac{dy}{dx}$. — 15
4. In a G.P, the 6th term is 24 and the 13th term is 3/16 then find the 20th term of the sequence — 15
5. Find the equation of tangent and normal to the curve $f(x) = x^3 - 12x^2 + 6x + 1$ at x = 2. — 15
6. Resolve into partial fraction $\frac{(x+1)(x+2)(2x+3)}{(x+4)(3x+5)(x+6)}$ — 15
7. Find the 5th term from the end in the expansion $(\frac{4y^2}{3} + \frac{1}{y})^{13}$ — 15
8. If $y = Sin (Cosx)$, find $\frac{d^2y}{dx^2}$ at $x = \frac{\pi}{2}$ — 15

Qu4. if $x = at^2, y = 2at$.

Find $\frac{dy}{dx}$.

J & K BOARD OF TECHNICAL EDUCATION

SCHEME: New
TIME ALLOWED: 03 Hrs
SUBJECT: Applied Chemistry-I

SEMESTER: 1ˢᵗ
MAX.MARKS: 100
BRANCHES : All

Note: 1.) Question from Section A is Compulsory.
2.) Do four questions from Section B and four questions from Section C.

Section A

(2x10=20)

Q1.) Multiple choice questions.

1.) A covalent bond is formed by:
a) Transference of electrons
b) Mutual sharing of electrons
c) donation of electrons
d) none of these

2.) The unit of molarity is:
a) Moles per litre
b) Moles per Kg
c) moles
d) none of these

3.) Water gas is a mixture of:
a) $N_2 + CO$
b) $N_2 + H_2$
c) $H_2 + CH_4$
d) $CO + H_2$

4.) Grease is an example of:
a) Solid lubricants
b) liquid lubricants
c) semi-solid lubricants
d) none of these.

5.) Which of the following is a equation of First law of Electrolysis?
a) $WZ = I*T$
b) $W = Z*I*T$
c) $WI = Z*T$
d) $I = W*Z*T$

6.) The most familiar .... Cell is dry cell.
a) secondary
b) primary
c) both a & b
d) none of these

7.) In which sphere ozone layer depletion is found?
a) Lithosphere
b) Stratosphere
c) ionosphere
d) none of these

8.) Which of the following is an example of greenhouse gas?
a) Carbon dioxide
b) methane
c) oxygen
d) both a & b

9.) Increased levels of air pollution result in
a) Global Warming
b) Soil erosion
c) Respiratory problems
d) None of these

10.) Recycling of waste means:
a) Reuse of waste
b) recovery of valuable products
c) reduction of waste
d) converting waste into valuable products.

Section B

(Short Answer type)
(4*5=20 Marks)

Q1.) Calculate the molarity of a solution containing 2.15 g of NaOH dissolved in 250ml of the solution.

Q2.) What is Bio gas? Give its Composition?

Q3.) Write a short note on solar Cell?

Q4.) Write a short note on ozone depletion?

Q5.) What are the source and control of noise Pollution?

Q6.) Write the short note on E- waste?

Q7.) Write a short note on anomalous properties of water due to hydrogen bonding.

Q8.) Define electrolytes and non-electrolytes with example?

Section C

(Long Answer type)
(4*15=60 Marks)

Q1.) Explain ionic and covalent bonds with three examples each.

Q2.) What are fuels? Also gives the classification of fuel?

Q3.) a) State and explain faraday's second law of electrolysis.
b) A current of 4 ampere on passing through a solution of $AgNO_3$ for 25 minutes, deposited 6.66 g of silver. Calculate electrochemical equivalent of silver.
(8,7)

Q4.) Write a short note on following:
a) Food Chain b) Greenhouse effect C) Food web

Q5.) Define Air Pollution? Write the source, effect and control of Air pollution?

Q6.) Define municipal solid waste? Write the collection and disposal of municipal solid waste?

Q7.) Define the followings.
a) Molality b) Morality c) solution
d) solvent e) solute f) pollutant
g) pollution h) PPM.

Q8.) Define Lubricant and lubrication? Explain the electrochemical theory of corrosion?

J & K BOARD OF TECHNICAL EDUCATION

SEMESTER: 1ᵗ
MAX.MARKS: 100
BRANCHES : All

SCHEME: New
TIME ALLOWED: 03 Hrs
SUBJECT: Applied Physics-I

Note:

I. There are THREE sections in the paper A, B, and C.

II. Answer all the 10 parts of the question in Section –A. Each part carries Two mark and all the 10 parts have objective type questions.

III. Answer any Four questions out of Eight questions in Section –B . Each question carries 5 marks.

IV. Answer any 4 questions out of 8 questions in Section –C . Each question carries 15 marks.

Section A

Q1   MULTIPLE CHOICE QUESTION   2

I. A vernier caliper least count is
   a) 00.01   b) 0.1   c)0.2   d) none of these

II. Two equal vectors have their resultant equal to each other of them. At   2
    what angle are they inclined ?
    a) 0   b) 60   c) 45   d) none of these

III. A couple produces   2
    a) No motion   b) linear and rotational motion
    c) Purely rotational motion   d) purely linear motion

IV. Whenever a wave enters from one medium to the another, its   2
    (a) Velocity changes.   (b) Frequency changes.
    (c) frequency does not change. (d) wavelength remains constant

V. A person can see objects only at a distance greater than 40 cm. He is   2
    advised to use lens of power:
    (a) – 2.5 D   (b) + 2.5 D   (c) -6.25 D   (d) +1.5 D

VI. In going from a denser to rarer medium a ray of light is   2
    a) Undeviated   b) Bent away from the normal
    c) Bent towards the normal   d) polarized

VII. Curie is a unit of   2
    (a) Radioactivity   (b) Energy of gamma rays
    (c) Intensity of gamma rays   (d) Half-life

VIII. Which of the following is a unique property of laser?   2
    a) Directional   b) Speed   c) Coherence   d) Wavelength

IX. Which of the following quantities has the same dimensions as that of   2
    energy?
    (a) Power   (b) Force   (c) Momentum   (d) Work

X. Which of these are vector quantities?   2
    a) momentum   b) Force   c) Impulse   d) Inertia

Section B

Do any Four questions

1. What are the limitations of dimensional analysis?   5
2. Two forces of magnitudes 8N and 12N are acting on a body at an angle of   5
   120° to each other . Find the resultant forces on the body.
3. Is torque a vector quantity? Explain your answer.   5
4. Give the relation between wave velocity, Wavelength and frequency.   5
5. What is total internal reflection Under what conditions does it take place? 5
6. Explain :   5
   a)Spontaneous emission   b) Population inversion
7. What is the difference between Light waves and Sound Waves.   5
8. Write down the Significant figures in the following
   a)12.33   b)0.0023   c) 1.001

Section C

Do any Four questions

1. What is an error ? Explain the different types of errors with example.   15
2. What do you mean by banking of roads? Derive an expression for the   15
   banking angle.
3. Derive an expression for torque in terms of moment of inertia.   15
4. What is acoustics of buildings? What are the various factors that must be 15
   kept in mind while designing an auditorium?
5. With the help of suitable ray diagram, explain the working of compound   15
   microscope. Define its magnifying power.
6. Describe the working of He –Ne laser.   15
7. a)What is lens formula? Derive the lens formula in case of concave lens.   15
   b) Derive an expression for the potential energy possessed by a body
   when raised through a certain height, by making use of dimensional
   analysis.
8. a) Two forces of magnitudes 8N and 12N are acting on a body at an angle   15
   of 120° to each other. Find the resultant forces on the body.
   b) Difference between Longitudinal and Transverse Waves

p

J & K BOARD OF TECHNICAL EDUCATION

SCHEME: New

SEMESTER: 1ˢᵗ

TIME ALLOWED: 03 Hrs

MAX.MARKS: 100

SUBJECT: Language & Communication Skills

BRANCHES : All

Instructions:

I. The question paper consists of 17 questions in 3 sections.

II. Section-A consists of 10 MCQ's and are compulsory to attempt .euch question carries equal marks.

III. Section-B consists of 8 Questions carrying 05 marks each. However, internal choice is provided in section B. Student has to attempt 4 Question from Section-B.

IV. Section –C Consists of 8 questions carrying 15 marks each. However, internal choice is provided in section C .Student has to attempt4 Question from Section-C

SECTION-A

Q.1. **Attempt all questions(2×10 marks) 20 Marks**

a. Non Verbal communication includes:
   - (i) Proxemics
   - (ii) Kinesics
   - (iii) para language
   - (iv) All of these

b. Which one of the following is not Gateway to communication:
   - (i) Mutual Trust
   - (ii) Personal Touch
   - (iii) Body Language
   - (iv) Complete

c. The background of R.K.Narayan's Novels and short stories is:
   - (i) Chennai
   - (iii) Dehra
   - (ii) Malgudi
   - (iv) Hall

d. Rusty took the job of teaching .... To Kishen
   - (i) Music
   - (ii) Poetry
   - (iii) English
   - (iv) None of these

e. Who wrote the poem" Stopping by woods on a snowy evening"
   - (i) Robert Browning
   - (ii) Robert Frost
   - (iii) William Wordsworth
   - (iv) Nissim Ezekiel

f. What is an Ode?
   - (i) A tragic poem
   - (iii) A lyric Poem
   - (ii) An Irony
   - (iv) None of these

g. Shahmal felt like a"
   - (i) Thief
   - (iii) Strange
   - (iii) Killer
   - (iv) Ashamed

h. Ruskin Bond wrote the book "Room on the Roof" When he was;
   - (i) Sixteen
   - (ii) Seventeen
   - (iii) Eighteen
   - (iv) Seventy

i. The background of R.K.Narayan's Novels and short stories is:

(i)	Chennai	(ii)	Dehra
(iii)	Malgudi	(iv)	Hall

j. ....is the ability to understand the feelings, emotions and needs of others:
(i)	Resilience	(ii)	Empathy
(iii)	Adaptability	(iv)	None of these

SECTION-B

Short Answer Type Questions. Attempt Any Four Questions (05×4 marks)20 MARKS

Q.1. Briefly Explain the art of Effective Communication?

Q.2. The Astrologer has changed his appearance when settled in the city. Why?

Q.3. What is an Onsite Interview?

Q.4. What is self awareness?

Q.5. What did Rusty Decide after the sudden death of Meena?

Q.6. What are the elements of voice modulation?

Q.7. Write down some good writing technique?

Q.8. Write a short note on Hard Skills?

SECTION-C

Essay Type Questions .Attempt Any Four Questions (15×4 marks)60 marks

Q.9 Give the Precis of the following summary along with a Suitable title ; (15)

"Speech is great blessing but it can be a great curse, for while it helps to make our intentions and Desires known to our fellows it can also, if we use it carelessly, make our attitude completely Misunderstood. A slip of the tongue, the use of an unusual word, or of an ambiguous word or so On, may create an enemy, where we have hoped to win a friend. Again different classes of people Use different vocabularies and the ordinary speech of an educated man may strike an uneducated Listener as showing pride, unwittingly we may use a word which bears different meanings to our Listener from what it does to men of our own class. Thus, speech is not a gift to use lightly without thought, but one which demands careful handling. Only a fool will express himself alike to all kind and conditions of men."

Q.10 Who was Jani? Describe her cock as well? Discuss the theme of the Story' 'The Cock Fight'?

Q.11. Write a letter to the Newspaper editor complaining about the curtailment of power supply in your area?

Q.12. Give the Sum and Substance of the Poem "Where the Mind Is without Fear".?What kind of qualities does the poet want to inculcate to his countrymen?

Q.13. What are Soft skills? What are the Advantages of Soft Skills?

Q.14. What is an Agenda? Draft an Agenda for the annual meeting Committee of your College?

Q.15. What is Group Discussion? What is the process of Group Discussion?

Q.16. What is the theme of the story"Astrologer's Day"?

Q.17. Trace the Development of the thought in the poem "Night of the Scorpion" written by Nissim Ezikiel?

J & K BOARD OF TECHNICAL EDUCATION

SCHEME: New

SEMESTER: 1ˢᵗ

TIME ALLOWED: 04 Hrs

MAX.MARKS: 100

SUBJECT: Engineering Graphics

BRANCHES : All

SET-A

A   Attempt Total five Questions, At least one question each from Section A & one question from Section B.

B   Question No. 1 is compulsory.

Q1 i   The art of presenting our thoughts on a piece of paper is called 2
a) Artistic drawing   b) drawing   c) Dimension   d) sketch

ii   Drawing pencils are graded according to increase in relative 2
a) Diameter   b) sharpness   c) length   d) hardness

iii   Dimension lines are .... thin lines. 2
a) Thick   b) thin   c) hidden line   d) extension line

iv   Diagonal scale represents .... Units. 2
a) Three   b) two   c) four   d) five

v   A radius is denoted by.................. 2
a) R   b) radii   c) d   d) r

vi   What is the shape with n number of sides, in which all the sides are equal, called? 2
a) Rectangle   b) circle   c) triangle   d) regular polygon

vii   Ratio of the object to the drawing is called? 2
a) R.F   b) scale   c) ratio   d) size

viii   In third angle projection, object is behind the V.P . 2
a) False   b) true

Ix   The symbol Φ(PHI) should be written before a dimension for 2
a) Diameter   b) radius   c) length   d) height

X   Guide lines should be drawn very ....and 2
a) Dark, Thin   b) light, thin   c) large, small   d) dark, light

SECTION- A

Q2   Construct a diagonal scale to read meters, decimetres and centimeters, R.F= 1/40, long enough measure 6 meter. Show on it a distance of 5m, 5dm and 6cm. 20

Q3   Draw single stroke A to Z vertical letters in height 28mm in 7:4 ratio. 20

Q4   A point P is 25 mm above the H.P .and its shortest distance xy is 45 mm the point p lies in the first quadrant. Show its plan and elevation. 20

Q5   Draw the orthographic front view and top view of the object given in figure-1.

SECTION-B

Q6 Draw a parabola inscribing the parallelogram of base 100 mm an axis 50 mm. 20

Q7 Draw the isometric view from the orthographic views shown in figure-2. 20

Q8 Draw an ellipse by using concentric circle method whose major axis Is 120 mm and minor axis is 80 mm. 20

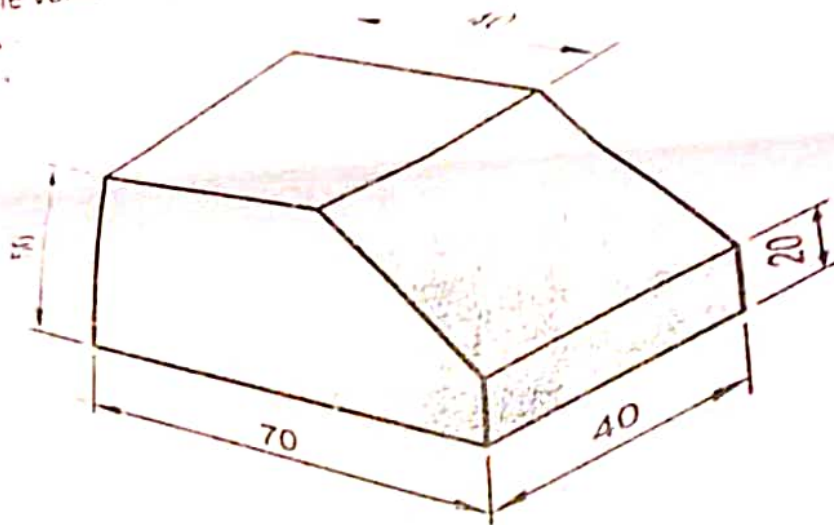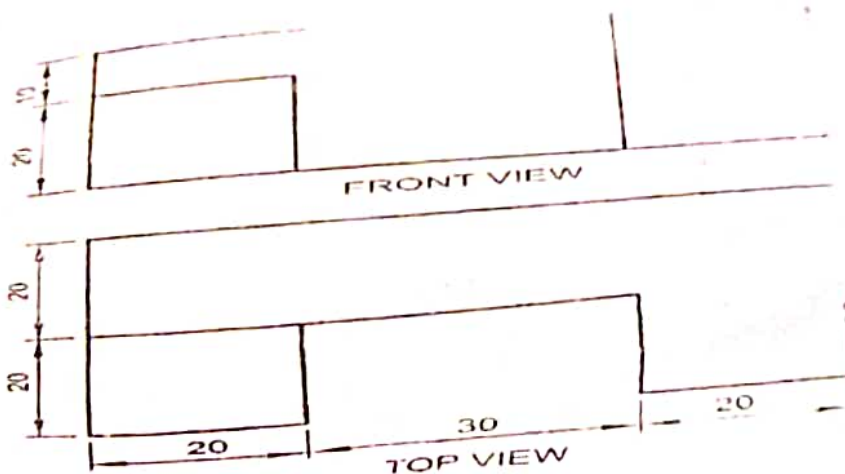Q9 Write the various type of modify and edit commands use in Auto CAD. 20

FIGURE-1

FIGURE-2