Hall Ticket Number :										

R-15

Code: 5G523

I B.Tech. II Semester Supplementary Examinations October 2020

Engineering Drawing-II

(Common to EEE, ECE, CSE & IT)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. A square ABCD of 40mm side has a corner on the HP and 20mm in front of the VP. All the sides of the squares are equally inclined to the HP and parallel to the VP. Draw its projections.

OR

2. A thin rectangular plate of sides of 60mm×30mm has its shortest side in the VP and inclined at 30^0 to the HP. Project its top view if its front view is a square of 30mm long sides.

UNIT–II

3. Draw the projections of a cylinder of base 30mm diameter and axis 50mm long, when it is resting on HP on its base.

OR

4. A pentagonal prism is resting on one of the corners of its base on the HP. The longer edge containing that corner is inclined at 45^0 to the base. The axis of the prism makes an angle of 30^0 to the V.P. Draw the projections of the solid.

UNIT–III

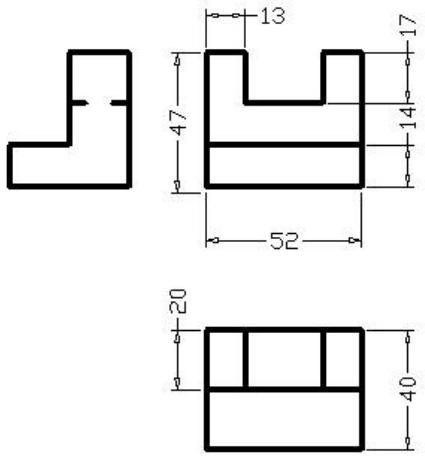
5. A hexagonal pyramid with side of base 30mm and axis 120mm long, is resting on its base on H.P. An edge of the base is parallel to VP.A horizontal section plane passing through a point on the axis, at a distance of 60mm from the base. Draw the isometric projection of the frustum of the pyramid.

OR

6. A cylinder of base diameter 50mm and axis height 65mm is resting on HP on one of its generators with its axis inclined at 50º to VP. Draw its projections.

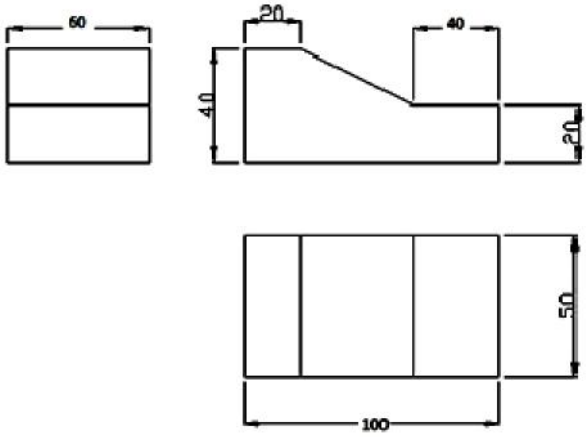
UNIT–IV

7. Draw the Isometric view of the following figure



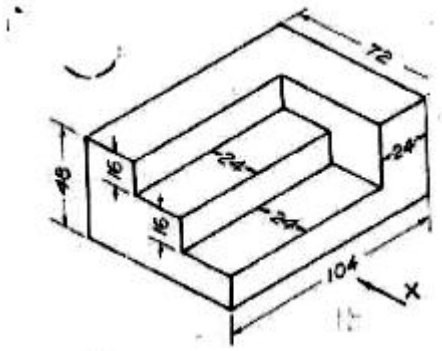
OR

8. Draw the Isometric view of the following figure



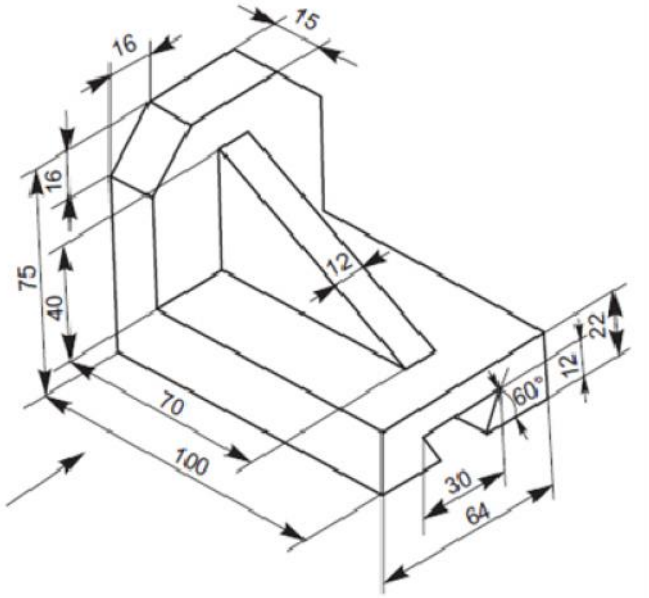
UNIT–V

9. Draw the orthographic view of the following figure



OR

10. Draw the orthographic view of the following figure



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Hall Ticket Number :										

R-15

Code: 5GC24

I B.Tech. II Semester Supplementary Examinations October 2020

Engineering Mathematics-II

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Evaluate $\int_0^5 \int_0^{x^2} x\left(x^2+y^2\right) dy\, dx$ 7M

   b) Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} x\, y\, z\, dx\, dy\, dz$ 7M

OR

2. Evaluate the integral by changing the order of integration $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} x\, y^2 dy\, dx$ 14M

UNIT–II

3. Find the Laplace Transform of i) $\mathrm{Cos}\, 2t$ ii) $\sin 2t \sin 3t$ 14M

OR

4. a) Write the Laplace Transforms of some standard functions 7M

   b) Find the Laplace Transform of $f(t)=\begin{cases} 2\ , 0 \le t \le 1 \\ 2t\ , t \ge 1 \end{cases}$ 7M

UNIT–III

5. Solve $y''+2y'-3y=\sin t,\ y(0)=0,\ y'(0)=0$ Using Laplace Transform 14M

OR

6. Solve $y''+2y'+5y=e^{-t}, y(0)=0,\ y'(0)=1$ Using Laplace Transform Technique 14M

UNIT–IV

7. a) Find $div\, \bar{F}$ and $curl\, \bar{F}$ where $\bar{F}=grad\left(x^3+y^3+z^3-3xyz\right)$ 7M

   b) Show that $div\left(grad\ r^n\right)=n(n+1)r^{n-2}$ 7M

OR

8. a) Find the angle between the surfaces $x^2+y^2+z^2=9$ and $z=x^2+y^2-3$ at the point $(2,-1,2)$ 7M

   b) Prove that $\nabla r^n = n r^{n-2}\bar{r}$ where $\bar{r}=x\,\bar{i}+y\,\bar{j}+z\,\bar{k}$ and $r=|\bar{r}|$ 7M

UNIT–V

9. Evaluate by stoke's theorem for a vector field $\bar{F}=(2x-y)\,\bar{i}-yz^2\,\bar{j}-y^2z\,\bar{k}$ over the upper half surface of $x^2+y^2+z^2=1$ bounded by projection on xy-plane. 14M

OR

10. Verify by Gauss Divergence theorem for $\bar{F}=x^3\bar{i}+y^3\,\bar{j}+z^3\,\bar{k}$ taken over the cube bounded by $x=0, x=a; y=0,\ y=a; z=0, z=a$ 14M

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Hall Ticket Number :										

R-15

Code: 5GC22

I B.Tech. II Semester Supplementary Examinations October 2020

Engineering Chemistry

(Common to EEE & ECE)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. What are ion exchange resins? Discuss the ion exchange method of water softening. How are spent resins regenerated? What are the advantages & disadvantages of this method? 14M

OR

2. a) How do you determine dissolved oxygen present in a water sample by Winkler's method
   b) Determine the temporary, permanent & total hardness of a hard water sample containing $Ca(HCO_3)_2$ = 30.5 mg/L, $Mg(HCO_3)_2$ = 36.5 mg/L, $MgSO_4$ = 37.6 mg/L, $CaCl_2$=32.4 mg/L, $CaSO_4$ = 42.1 mg/L. 7M

UNIT–II

3. a) What are fuel cells? Explain the working of Hydrogen oxygen fuel cell 7M
   b) Describe the construction and chemical reactions involved in lithium ion battery 7M

OR

4. a) Explain Sacrificial anode and Impressed current cathodic protection in detail. Write their applications 7M
   b) Describe the process of electroplating of Nickel 7M

UNIT–III

5. a) Differentiate between addition polymerization & condensation polymerization 7M
   b) Write a brief note on Vulcanization and compounding of rubber 7M

OR

6. a) Write a note on thermoplastics and thermosetting plastics 7M
   b) Describe the preparation, properties and engineering applications of Bakelite 7M

UNIT–IV

7. a) Clarify the difference between octane number and cetane number? 7M
   b) Tabulate the names of the fractions, their compositions, boiling points and important applications when petroleum is distilled? 7M

OR

8. a) Write a brief outline on flue gases, analysis and interpretation of results? 7M
   b) How is cracked gasoline manufactured? 7M

UNIT–V

9. Describe the four important properties of good refractories. 14M

OR

10. Describe the following properties of Lubricants and explain their significance.
    i) Viscosity ii) Aniline point
    iii) Cloud and pour point iv) Neutralization number 14M

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Hall Ticket Number :										

R-15

Code: 5G121

I B.Tech. II Semester Supplementary Examinations October 2020

C Programming and Data Structures

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) What is a pointer? Explain in detail about pointer arithmetic.
   b) Write a program to read and display array elements using pointers

OR

2. a) What is the use of command line arguments
   b) Write a program using pointers to compute the sum of all elements in an array.

UNIT–II

3. a) Define Structures. Explain with an example how structure members are initialized and accessed
   b) Explain different modes to open a file

OR

4. a) Write a C Program to sort the given array in descending order using Bubble Sort.
   b) Write a C program to find the given element using linear searching.

UNIT–III

5. What is a stack? How it can be represented in "C" using arrays?

OR

6. a) What is Data Structure? Explain in detail about different type of data structures.
   b) Write the steps for evaluating postfix expression

UNIT–IV

7. What is a Singly Linked List.? Explain different operations of a singly linked list with suitable examples.

OR

8. What is a Circular Linked List.? Explain different operations of a Circular linked list with suitable examples.

UNIT–V

9. Define binary search tree. Explain with example insertion of an element in the binary search tree.

OR

10. a) Define the following terms of graphs. i) Undirected graph ii) In degree iii) Digraph
    b) Define and write applications of graphs.

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Hall Ticket Number :										

R-15

Code: 5G321

I B.Tech. II Semester Supplementary Examinations October 2020

Electronic Devices and Circuits-II

(Common to EEE & ECE)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Write a short notes on
   i. Thermal resistance
   ii. Heat sinks 7M
   b) Illustrate the importance of dc and ac load line circuit in transistor amplifiers. 7M

OR

2. a) Define operating point , find out how operating point is fixed on a dc load line 7M
   b) With required equations explain how transistor acts as an amplifier 7M

UNIT–II

3. a) With a neat sketch explain the transfer and drain characteristics of JFET 7M
   b) What are the differences between Bipolar Junction Transistor & Field Effect Transistor? 7M

OR

4. a) Explain the principle and working of N-channel MOSFET with labeled diagram showing constructional features. 7M
   b) Write the necessary steps for gate bias circuit design and voltage divider bias circuit design. 7M

UNIT–III

5. a) With the help a graphical demonstration illustrate how a transistor can be used as an amplifier. 7M
   b) Write about classification of amplifiers? 7M

OR

6. a) Write short notes on the following
      i. DC and AC load lines
      ii. Phase reversal 7M
   b) Why ac load line is steeper than dc load line? 7M

UNIT–IV

7. a) Draw a two stage RC coupled Amplifier circuit and explain its operation. 7M
   b) List the various applications of RC coupled Amplifier 7M

OR

8. a) Draw the circuit of transformer coupled amplifier and explain its operation. 7M
   b) List the various applications of transformer coupled amplifier 7M

UNIT–V

9. a) Explain the working of Photo Transistor with neat diagram 7M
   b) Discuss the principle of operation of UJT 7M

OR

10. a) Write short notes on Schottky Barrier Diode 7M
    b) With a neat sketch explain the characteristics of SCR. 7M

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