Hall Ticket Number :										

R-15

Code: 5G523

I B.Tech. II Semester Supplementary Examinations May/June 2019

Engineering Drawing –II

(Common to EEE, ECE, CSE and 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. Draw the projections of a regular pentagon of 30mm side with its surface is making an angle of 30^0 with H.P. One of the sides of the pentagon is lying on the H.P and perpendicular to V.P.

OR

2. A regular hexagonal plane of 35mm side has a corner at 20mm from V.P and 50mm from H.P. Its surface is inclined at 45^0 to V.P and perpendicular to H.P. Draw the projections of the plane.

UNIT–II

3. Draw the projections of a cone its base 50mm diameter and axis 80mm long. The cone is lying on the H.P by one of its generators with its axis parallel to the V.P.

OR

4. A triangular prism of base 30mm side and axis 50mm long is resting on H.P on one of its base edge such that the edge is perpendicular to V.P. Draw the projections of the solid when its axis is 45^0 inclined to H.P.

UNIT–III

5. A hexagonal prism of base 25mm side and axis 45mm long is positioned with one of its base edges on H.P such that the axis is inclined at 30^0 to H.P and 45^0 to V.P. Draw the projections of the prism.

OR

6. A cone of base diameter 50mm and altitude 60mm is lying on one of its generators on the H.P and its axis makes an angle of 30^0 with the V.P.

UNIT–IV

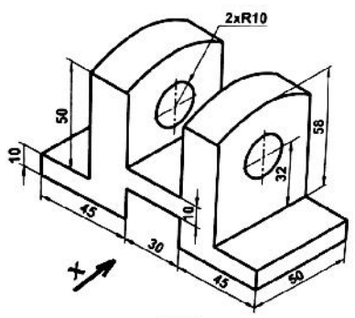
7. Draw the isometric view of a cylinder of base diameter 30mm and height is 70mm, when its axis is perpendicular to H.P.

OR

8. Draw the isometric view of a pentagonal pyramid of base side 30mm and height is 75mm, when its axis is perpendicular to H.P.

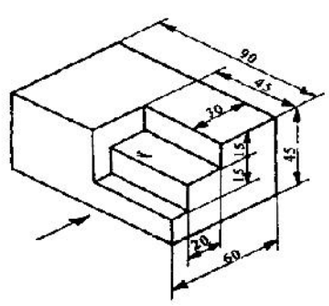
UNIT–V

9. The Figure shows a machine component. Draw its (i) Front view (ii) Top view (iii) Side view. Assume all the dimensions are in 'mm '.



OR

10. The Figure shows an object. Draw its (i) Front view (ii) Top view (iii) Side view. Assume all the dimensions are in 'mm '.



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Hall Ticket Number :										

R-15

Code: 5GC22

I B.Tech. II Semester Supplementary Examinations May/June 2019

Engineering Chemistry

(Common to EEE and 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) Give the detailed procedure for the estimation of dissolved oxygen present in water with principle and chemical equations.

   b) With the help of neat diagram, explain the use of Zeolite process for softening of water and its limitations.

OR

2. a) Describe the ion-exchange process of softening for water.

   b) What is meant by sterilization of water? Explain how sterilization of water is carried out by using chlorine and ozone.

UNIT–II

3. a) What are fuel cells? Describe the working principle of methanol-oxygen fuel cell with reactions.

   b) Describe the construction lead –acid battery with the reactions occurring during discharge.

OR

4. Define fuel cell explain the construction and working of H_2-O_2 Fuel cell. What are the advantages and limitations of fuel cell write the reactions involved.

UNIT–III

5. a) Distinguish between thermoplastic and thermosetting polymers.

   b) Write a note on compounding of rubber?

OR

6. Explain the following with examples.

   (i) Monomer (ii) Polymer (iii) Functionality (iv) Degree of polymerization (v) Tacticity

UNIT–IV

7. a) Discuss any five characteristics of a good fuel?

   b) Classify the fuels with examples?

OR

8. a) Describe the determination of calorific value of solid fuel using bomb calorimeter.

   b) Describe the fractional distillation of petroleum?

UNIT–V

9. What is setting and hardening of cement? Write the chemical reactions that take place during the setting and hardening of cement and explain?

OR

10. What is the composition of Portland cement? Explain how Portland cement is manufactured by wet process, with the help of chemical reactions involved in it.

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Hall Ticket Number :										

R-15

Code: 5GC24

I B.Tech. II Semester Supplementary Examinations May 2019

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. Change the order of integration in $\int_0^{\infty}\int_{x^2}^{2-x} xy\, dy\, dx$ and hence evaluate the same. 14M

OR

2. a) Find the area of a plane in the form of a quadrant of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$. 7M

   b) Evaluate $\int_0^{\frac{\pi}{2}}\int_0^{a\sin\theta}\int_0^{\frac{a^2-r^2}{a}} r\, dz\, dr\, d\theta$. 7M

UNIT–II

3. a) Evaluate $\int_0^{\infty} e^{-t}\left(\frac{\cos at-\cos bt}{t}\right) dt$. 7M

   b) Find the Laplace transform $\int_0^t \frac{e^t \sin nt}{t}\, dt$. 7M

OR

4. a) Find $L^{-1}\left\{\frac{s^2}{(s^2+a^2)(s^2+b^2)}\right\}$ by convolution theorem. 7M

   b) Find $L^{-1}\left\{\frac{(s^2+a^2)^2}{s^5}\right\}$ 7M

   $L^{-1}\left\{\frac{}{(s^2+b^2)}\right\}$

   $L^{-1}\left\{\frac{}{s^4+4a^4}\right\}$.

UNIT–III

5. Solve $(D^2+9)x=\cos 2t$ using Laplace transform given that $x(0)=1, x\left(\frac{\pi}{2}\right)=-1$. 14M

OR

6. Solve $y''-3y'+2y=4t+e^{3t}, y(0)=1, y'(0)=1$. 14M

UNIT–IV

7. a) Find a unit vector normal to the surface $xy^3z^2=4$ at the point $(-1,-1,2)$. 7M

   b) If **A** and **B** are irrotational, prove that $\vec{A}\times\vec{B}$ is solenoidal. 7M

OR

8. Evaluate the line integral $\int_c (xy+x^2)dx+(x^2+y^2)dy$, where c is the square formed by the lines $y=\pm 1$ and $x=\pm 1$. 14M

UNIT–V

9. Verify Green's theorem for $\int_c[(3x^2-8y^2)dx+(4y-6xy)dy]$, where C is bounded by the region $x=0, y=0$ and $x+y=1$. 14M

OR

10. Verify Stoke's theorem for $\vec{f}=(x^2+y^2)\vec{i}-2xy\vec{j}$ taken around the rectangle bounded by the lines $x=\pm a, y=0, y=b$. 14M

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Hall Ticket Number :										

R-15

Code: 5G121

I B.Tech. II Semester Supplementary Examinations May/June 2019

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 meant by a pointer? Write a program to swap the values of two variables using pointers. 7M

   b) Write a program to show the usage of pointer to structure. 7M

OR

2. a) Demonstrate the use of &(address of) and *(value at address) operators 7M

   b) Write a program to show a function returning pointer. 7M

UNIT–II

3. a) What is a structure? Explain the syntax of Structure declaration with example 7M

   b) How Selection sort is different from bubble sort? 7M

OR

4. a) Define Union. Explain its general syntax with one example. 7M

   b) Arrange the following integers in ascending order using Merge sort procedure. 39,48,62,18,23,34,58,12. 7M

UNIT–III

5. a) Explain stack with basic Operations (push and pop). 7M

   b) Design the procedure to count number of parenthesis in an expression using Stack. 7M

OR

6. Compare Linear Queue and Circular Queue. Write a program to insert and delete from a circular queue. 14M

UNIT–IV

7. Implement Insertion, Deletion and search operations at any position in a singly linked list. 14M

OR

8. a) Write insertion and deletion functions for the doubly linked list. 7M

   b) Summarize Circular Linked List 7M

UNIT–V

9. a) Construct a Binary tree T by using the following in order and post order traversals of T.

   In order: D K I B A E G H J F C

   Post Order: K D I E A G B F C J H. 7M

   b) Explain various methods of representing graphs in memory. 7M

OR

10. What is Binary Search Tree (BST)? How do we do search in BST? Write a procedure for insertion and deletion operations on BST. 14M

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Hall Ticket Number :										

R-15

Code: 5G321

I B.Tech. II Semester Supplementary Examinations May 2019

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) Derive the expression for the stability factor S of a fixed bias circuit.
   b) Distinguish between different biasing configuration

OR

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

UNIT–II

3. a) Draw the low frequency small signal FET Model; give its importance in amplifiers.
   b) Define Tran conductance, Drain to Source resistance and Pinch off voltage.

OR

4. a) Explain the construction, working principle and characteristics of enhancement mode MOSFETS.
   b) Discuss the relationship between FET parameters.

UNIT–III

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

OR

6. With the help of transistor equivalent circuit with signal source, derive
   i. Voltage gain
   ii. Current gain
   iii. Power gain

UNIT–IV

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

OR

8. a) Explain the analysis of frequency response of transformer coupled amplifier
   b) List the advantages and disadvantages of transformer coupled amplifier.

UNIT–V

9. a) Explain the working of Photo Diode with neat diagram
   b) Discuss the principle of operation of the PIN diode

OR

10. a) With a neat sketch explain the principle of operation and characteristics of Tunnel Diode.
    b) Explain the structure, equivalent circuit, and characteristics of SCR.

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