R-15

Code: 5GC21

I B.Tech. II Semester Regular Examinations June 2016
Technical English
(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) Do you believe that Modern Technology made human being lazy?   7M
    b) Write in your own words on 'Mass Production'   7M

OR

2. a) Explain the advantages of Technology in about 50 words.   7M
    b) Complete the sentences as directed.
       i) He *unfolded* his full hand shirt in the exam hall. (write the antonym of the italicized word)
       ii) He is a great **patriot**. (write the synonym of the bold word)
       iii) She went to ___ shop to buy a pen.(fill in the blank with 'stationary' / 'stationery')
       iv) He accepted the gift _____ money.(fill in the blank with a homonym of accept)
       v) Kanhayya _____ the strike at Delhi. (Fill in the blank with suitable phrasal verb)
       vi) The students are ___ (listening/hearing) a tractor noise.(Choose the right verb)
       vii) I have to attend ____ exam before final exam.(imagine and fill with prefix word)   7M

UNIT–II

3. a) Suggest few responsibilities to save climate from radiation.   7M
    b) What is low pressure? How does it effect on climate?   7M

OR

4. a) Write with examples of the factors that cause climate change.   7M
    b) What is Elnino and Lanina? Explain the condition of recent times.   7M

UNIT–III

5. a) In response to an advertisement, write a cover letter, possessed basic qualification
       of B.Tech., to Soft Tech Software Company for the position of Project Manager.   7M
    b) What are Photovoltaic panels?-Explain how it works.   7M

OR

6. a) Why top countries use solar power? What are the benefits by using solar panels?   7M
    b) Rewrite the following sentences as directed.
           i) I saw an angry tiger in the zoo. (Change into complex sentence)
           ii) In spite of his poverty, he couldn't pay fee. (Change into compound sentence)
           iii) What is the _____ (fair/fare) of shatavahana express ticket from here?
           iv) I _____ (alter/altar) my class due to busy schedule.
           v) I _____ (waist/waste) my money on movies.
           vi) The passengers are _____ (weighing/waiting) for the luggage.
           vii) He took a _____ (break/brake) for rest for a while.   7M

UNIT–IV

7. a) Write on 'water pollution' that caused by factory chemicals. 7M

    b) What kind of measures to prevent soil erosion? 7M

OR

8. a) What are the methods to generate power form water? 7M

    b) Keeping in view of Raman's, how can we prevent wastage of water? 7M

UNIT–V

9. a) Spiritual knowledge is the only thing that can destroy our miseries for ever-Explain. 10M

    b) Write an essay that tells us about 'unattached'. 4M

OR

10. a) Define 'nature of work' in about 5O words. 10M

    b) Fill in the blanks with suitable connotations.
        i) He is _____ (handicapped/disabled) to listen music.
        ii) Her _____ (childish/childlike) mentality irritates everyone.
        iii) The flight ticket to Mumbai is _____ (cheap/economical)
        iv) She is very _____ (curious/interest) to ask doubts. 4M

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Code: 5G523-A

R-15

I B.Tech. II Semester Regular Examinations May/June 2016
Engineering Drawing-II
(Electronics & Communication Engineering)

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 circular plate of negligible thickness and 50 mm diameter appears as an ellipse in the front view, having its major axis 50 mm long and minor axis 30 mm long. Draw its top view when the major axis of the ellipse is horizontal. 14M

OR

2. Draw the projections of a regular hexagon of 25 mm side, having one of its sides in the H.P and inclined at 60^0 to the V.P and its surface making an angle of 45^0 with the H.P. 14M

UNIT–II

3. A hexagonal pyramid side of base 25 mm axis 50 mm long lies with one of its triangular faces on the H.P and its axis is parallel to the V.P. Draw its projections. 14M

OR

4. Draw the projections of a pentagonal pyramid of base 25 mm side and axis 60 mm long when it is lying on H.P on one of its base edges, such that the axis is parallel to VP and inclined at 30^0 to HP. 14M

UNIT–III

5. A pentagonal prism of side of base 30mm, axis 70mm is resting on one of its base edges in H.P. with its axis inclined at 45^0 to H.P. The top view of the axis is inclined at 30^0 to V.P. Draw the projections. 14M

OR

6. A square prism, side of base 30mm and axis 50mm long, has its axis inclined at 60^0 to HP. It has an edge of its base in the HP and inclined at 45^0 to VP. Draw the projections. 14M

UNIT–IV

7. A cone, diameter of base 45mm and height 50mm is mounted centrally on the top of a square slab of thickness 10mm & side 65mm. Draw the isometric view of the combined solid. 14M

OR

8. A hexagonal pyramid is resting with its base on a cylinder such that one of the edges is perpendicular to VP. The edge of the base of the pyramid is 30mm and axis 70mm. Draw the isometric view of the combined solid, when the diameter of the cylinder is 80mm and axis is 40mm long. 14M

UNIT–V

9 Draw the isometric view of Fig.1

Fig.1
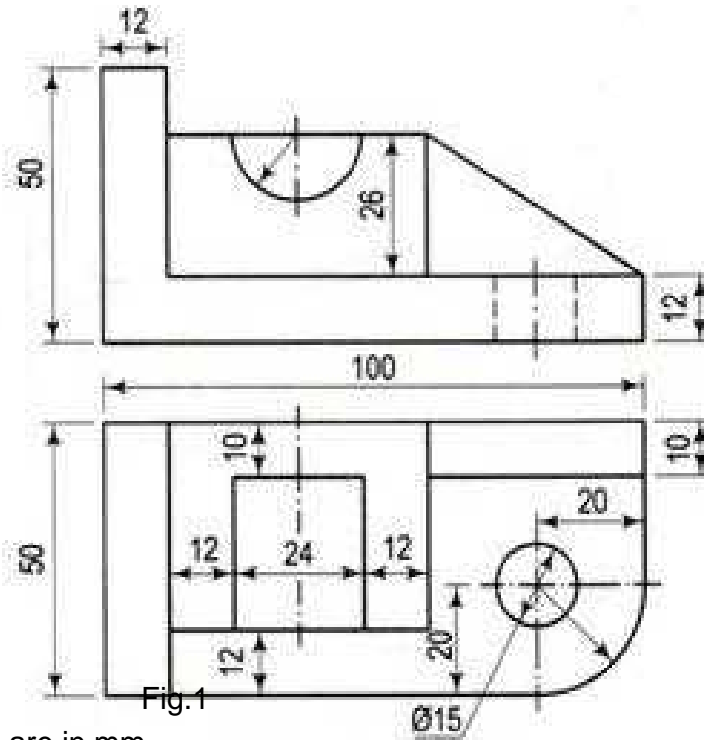
Note: All dimensions are in mm.   14M

OR

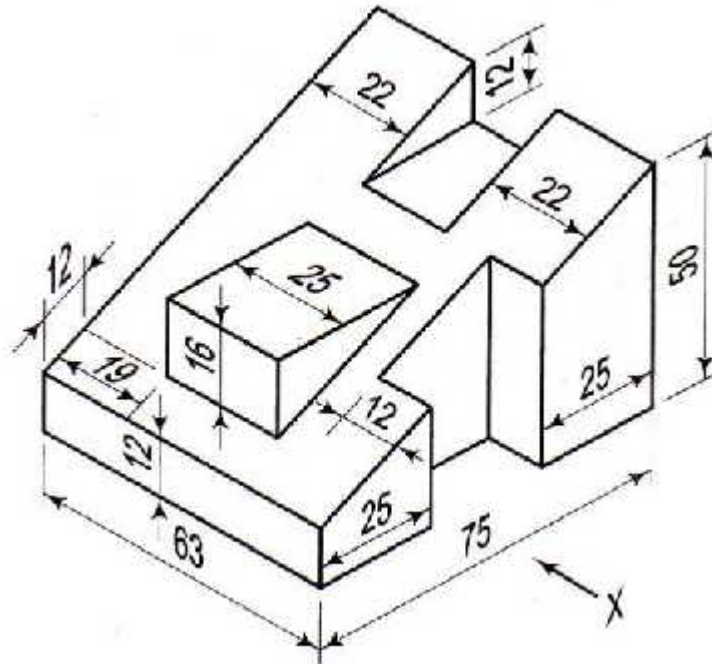10 Draw   (i) front view (ii) top view and (iii) side view from the left of Fig.2.

Fig.2

Note: All dimensions are in mm.   14M

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I B.Tech. II Semester Regular Examinations June 2016
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) Draw a BJT fixed bias circuit and derive the expression for the stability factor S.   8M

    b) Differentiate stabilization and compensation techniques.   6M

OR

2.   The h-parameters of a transistor used in a CE circuit are h_{ie} = 1K , h_{re} = 10x10-4, h_{fe} = 50, h_{oe} = 100 K℧. The load resistance for the transistor is 1 K in the collector circuit. Determine R_i, R_o, A_V and A_I in the amplifier stage (Assume R_s = 1000).   14M

UNIT–II

3. a) Write short notes on different types of FET biasing?   7M

    b) Explain how the JFET is used as Voltage controlled device?   7M

OR

4. a) Draw the small signal model of JFET in all configurations.   7M

    b) A self biased p-channel JFET has a pinch-off voltage of v_p=5V and IDSS=12mA. The supply voltage is 12v determine the values of RD and RS so that ID=5mA and VDS=6v.   7M

UNIT–III

5. a) How can a DC equivalent circuit of an amplifier be obtained?   6M

    b) Compare the characteristics of the different configurations of BJT amplifiers   8M

OR

6. a) For a CB transistor amplifier driven by a voltage source of internal resistance R_s=1200 , the load impedance is a resistor R_L=1000 . The h-parameters are h_{ib}=22 , h_{rb}=3X10-4, h_{fb}=-0.98 and h_{ob}=0.5µA/V. Compute the current gain A_I, The input impedance R_i, Voltage gain A_V, overall voltage gain A_{VS}, Overall current gain A_{IS}, output impedance Z_o, and power gain A_P using exact analysis and approximate analysis.   8M

    b) What are the different types of amplifiers?   6M

UNIT–IV

7.   Explain the analysis of low frequency response of RC coupled amplifiers.   14M

OR

8. a) Make complete analysis of single tuned amplifier &derive the necessary expressions.   7M

    b) Compare different types of coupling   7M

UNIT–V

9 a) Write short notes on Schottky Barrier Diode.   7M

    b) With a neat sketch explain the characteristics of SCR.   7M

OR

10.   With a neat sketch explain the principle of operation and characteristics of Tunnel Diode.   14M

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I B.Tech. II Semester Regular Examinations May/June 2016
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) Comment on hardness of water and mention any one of the method for estimation of hardness of water. 7M
   b) What are boiler troubles? Write a note on disadvantages of boiler troubles. 7M

OR

2. a) Explain the treatment of saline water by reverse osmosis in detail. 7M
   b) Write any one of the methods for purification of lake water for domestic purpose and comment on break point chlorine. 7M

UNIT–II

3. a) Explain the working principle of primary batteries including chemical reactions. 7M
   b) Describe working procedure of electrochemical sensors with suitable examples. 7M

OR

4. a) Write a note on electrochemical corrosion. 7M
   b) Explain the factors which effect the corrosion. 7M

UNIT–III

5. a) What are polymers? Explain the types of polymerization processes. 7M
   b) Write the differences between thermosetting and thermoplastics. 7M

OR

6. a) Explain the preparation, properties and applications of Buna-S rubber. 7M
   b) Comment on silicones and polyphosphazines. 7M

UNIT–IV

7. a) Explain the classification of fuels and write the characteristics for good fuel 7M
   b) Explain Otto Hoffmann's by product oven process 7M

OR

8. a) Explain the following
      i) Knocking   **ii**) Octane number   **iii**) Cetane number 7M
   b) Compare the liquid fuels with gaseous fuels. 7M

UNIT–V

9. a) Explain the manufacture of Portland cement. 7M
   b) Comment on theory of lubrication and its applications. 7M

OR

10. a) Write any seven applications of refractories. 7M
    b) Explain the setting and hardening of Portland cement with its chemical reactions. 7M

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Code: 5GC24

R-15

I B.Tech. II Semester Regular Examinations May/June 2016
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. Evaluate the double integral $\iint\limits_{R} xy\,dxdy,$ where R is the region bounded by

    the x-axis, the line y=2x and the parabola $y = \dfrac{x^2}{4a}$ 14M

OR

2. Evaluate $\iint\limits_{R} (x+y)^2\,dxdy$, where R is the parallelogram in the xy-plane with

    vertices (1,0), (3,1), (2,2), (0,1) using the transformation u=x+y and v=x-2y   14M

| UNIT–II |

3. Find the Laplace transform of the periodic function defined by the saw
    tooth wave $f(t) = t, \quad 0 \le t \le a, \quad f(t+a) = f(t).$ 14M

OR

4. Find the inverse Laplace transform of the following functions

    a) $\dfrac{2(s+1)}{(s^2 + 2s + 2)^2}$ **b)** $\log\left(\dfrac{s+c}{s+d}\right)$ where c, d are constants.

                                                                                    14M

| UNIT–III |

5. Find the solution of the initial value problem $y'' + 4y' + 13y = e^{-t}$,
    $y(0) = 0, \ y'(0) = 2.$ 14M

OR

6. Using convolution, solve the initial value problem $y'' + 9y = \sin 3t$,
    $y(0) = 0, \ y'(0) = 0.$ 14M

| UNIT–IV |

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

    b) Show that $\nabla^2\left(\dfrac{1}{r}\right) = 0$.   7M

OR

8. Show that the vector field $\overline{F} = 2x(y^2 + z^3)\overline{i} + 2x^2 y\overline{j} + 3x^2 z^2\overline{k}$ is conservative.
    Find its scalar potential and the work done in moving a particle from
    (-1, 2, 1) to (2, 3, 4).   14M

| UNIT–V |

9. Verify Green's theorem for $\int\limits_{C}\left[\left(xy + y^2\right)dx + x^2 dy\right]$ where C is bounded by

    y=x and y=x².   14M

OR

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

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R-15

Code : 5GC13

I B.Tech. I Semester Supplementary Examinations May/June 2016

Engineering Physics

(Common to EEE & ECE)

Max. Marks: 70   Time: 3 Hours

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

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UNIT-I

1. a) Explain Fraunhofer diffraction of light at single slit and its intensity distribution.   10M
   b) Write about important characteristics of laser.   4M

OR

2. a) Defining the terms obtain expressions for Numerical Aperture and Acceptance Angle of an optical fiber.   9M
   b) With the help of block diagram, explain an optical fiber communication system.   5M

UNIT-II

3. a) Deduce the expression of distance of separation between two successive parallel (hkl) planes in a cubic crystal.   7M
   b) Defining what is meant by defect in crystals, describe various point defects in crystalline solids.   7M

OR

4. a) Write in detail the powder X-ray diffraction method   8M
   b) Explain the applications of ultrasonics in non-destructive testing of materials.   6M

UNIT-III

5. a) State Heisenberg's uncertainity principle.   2M
   b) Applying time independent wave equation solve the case of motion of a particle between two infinite height impenetrable walls and plot probability amplitude and density for the first three allowed states.   12M

OR

6. a) On the basis of free electron theory derive expression for electrical conductivity.   7M
   b) Write about Fermi-Dirac distribution function and its dependence on temperature.   7M

UNIT-IV

7. a) Distinguish between intrinsic and extrinsic semiconductors   4M
   b) What is Hall effect? Derive expression of Hall coefficient in case of p-type semiconductors.   10M

OR

8. a) Plot and explain hysteresis loop in case of ferromagnetic materials.   7M
   b) With examples, discuss classification of magnetic materials into soft and hard magnetic.   7M

UNIT-V

9. a) Define superconductivity and explain with relevant diagrams the effect of temperature and magnetic field on superconductivity   7M
   b) Explain type-I & type-II superconductors   7M

OR

10. a) Explain synthesis of nanomaterials using sol-gel method and discuss its advantages over other methods.   8M
    b) Write about carbon nano tubes and their properties.   6M

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I B.Tech. II Semester Regular Examinations May/June 2016
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? Explain about pointer to array.   7M

    b) Write a C program to sort element in an array using pointer to array.   7M

OR

2. a) What do you mean by dynamic memory allocation?   7M

    b) Discuss the different dynamic memory allocation functions available in c.   7M

UNIT–II

3. a) Explain file handling functions with syntax.   7M

    b) Write a C program to count the number of occurrences of a key word in an
       input program.   7M

OR

4. a) Explain Quick sort with the help of an example?   7M

    b) Write a C program to sort the elements using Quicksort.   7M

UNIT–III

5. a) Explain stack with basic Operations (push and pop).   9M

    b) Convert the following infix expression into Postfix Expression
       A+B*C/D^E+(F+G)*H   5M

OR

6.   Write an algorithm to insert and delete an element in a circular Queue.   14M

UNIT–IV

7. a) Write a C program to search an element in a list using linked list.   7M

    b) Write a C program to concatenate two linked lists.   7M

OR

8.   Writ a C program to insert and delete an element in a given list using double
       linked list.   14M

UNIT–V

9. a) Define binary tree, complete binary tree and almost complete binary tree.   7M

    b) Explain various traversal techniques in a binary search tree   7M

OR

10. a) Consider the set S= {15, 20, -4, 28, 2, 6, 9}, Draw the binary search tree T by
       taking keys in set S one at a time in the order assume the binary search tree is
       initially empty.   7M

    b) Write a recursive algorithm to search the element in a binary search tree.   7M

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