**Q.P. Code: 253612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Construction Planning and Management (CE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**

**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | Write the significance of construction management | 7M |
| | (b) | Discuss the objectives and functions of construction management | 7M |
| | | (OR) | |
| 2. | (a) | Explain the different stages of construction | 7M |
| | (b) | Write the types of construction and explain any two | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Describe PERT and CPM? | 7M |
| | (b) | Write about components of Networks? | 7M |
| | | (OR) | |
| 4. | (a) | What are the charts? Enumerate the various types of chart with graphical representation? | 7M |
| | (b) | Write the new techniques in construction management | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | | Discuss the role of tractors in earth moving. What considerations govern the selection of wheel type or crawler type tractor on a job? Compare their applications | 14M |
| | | (OR) | |
| 6. | (a) | What are the various factors affecting while selecting construction equipment's? | 7M |
| | (b) | Name the equipment's needed for compacting concrete Explain their uses in detail? | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Explain the different stages of inspection and quality control | 7M |
| | (b) | Discuss the need for Inspection and quality control | 7M |
| | | (OR) | |
| 8. | (a) | What are the different aspects of project realization | 7M |
| | (b) | Explain about Ethical audit inspection | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | State and describe various causes of accidents at the construction site. | 7M |
| | (b) | Enlist various safety codes to be used to reduce accidents at various construction sites | 7M |
| | | (OR) | |
| 10. | (a) | Explain in detail about quality control and safety engineering | 7M |
| | (b) | Discuss importance of safety in construction sites | 7M |

**Q.P. Code: 253812** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Advanced Foundation Engineering (CE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

1. (a) Briefly describe about design of anchored bulkhead by fixed-earth method? **7M**

   (b) An anchored bulk head 5 m high retains sand on both sides. The anchor rods are 1m below the top and depth of embedment is 2 m. Determine the factor of safety against failure. Angle of internal friction of sand is 30º and the sand is submerged throughout with a unit weight of 10 kN /m³. Comment if the depth of embedment which render the design adequate **7M**

**(OR)**

2. (a) What are different types of sheet pile walls? Draw the sketches showing the pressure distribution. **7M**

   (b) How will you fix the depth of embedment of different sheet piles in cohesive and cohesion less soils? **7M**

**UNIT – II**

3. (a) What is coffer dam? Explain the different types of coffer dams **7M**

   (b) Draw different types of apparent pressure diagrams used in the design of braced cuts. What are the factors that affect the pressure distribution? **7M**

**(OR)**

4. (a) Discuss the method for the design of circular cellular coffer dam on rock. **7M**

   (b) Draw different types of apparent pressure diagrams used in the design of braced cuts. What are the factors that affect the pressure distribution? **7M**

**UNIT – III**

5. (a) What are the components of well foundations and their uses? **7M**

   (b) What are the measures to be taken for rectification of tilts and shifts of well foundations? **7M**

**(OR)**

6. Discuss the IRC method for the design of well foundation. **14M**

**UNIT – IV**

7. (a) Explain the method of foundation design and treatment of collapsible soil **7M**

   (b) A soil profile's active-zone depth is 3.5 m. If a foundation is to be placed 0.5 m below the ground surface, what would be the estimated total swell? The following data were obtained from laboratory tests. **7M**

| Depth (m) | 0.5 | 1 | 2 | 3 |
|---|---|---|---|---|
| Swell (%) | 2 | 1.5 | 0.75 | 0.25 |

If the allowable total swell is 10 mm, what would be the undercut necessary to reduce the total swell?

**(OR)**

8. (a) Explain the design consideration for the design of foundation in Expansive soils. **7M**

   (b) How to identify the expansive soils? Explain the causes of swelling in expansive Soils? **7M**

**UNIT-V**

9. (a) Explain the principle of soil-bitumen stabilization. What are the factors affecting the properties of soil-bitumen. **7M**

   (b) Write a note on stabilization of soil with lime and mention the physical and chemical changes that occur in soil **7M**

**(OR)**

10. (a) Explain the various components of reinforced earth with a neat sketch. **7M**

    (b) What are the functions and applications of geo-grid? **7M**

**Q.P. Code: 254212** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Water Resources Engineering – II (CE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

1. (a) What is a spillway? Describe the various components of a spillway. 7M
   (b) Compute the discharge over an Ogee weir with coefficient of discharge equal to 2.4 at a head of 2 m. The length of the spillway is 100m. The weir crest is 8 m above the bottom of the approach channel having the same width as that of the spillway. 7M

(OR)

2. (a) What are the various types of energy dissipation devices used below spillways in relation to the positions of tail water rating curve (TWRC) and jump height curve (JHC). 7M
   (b) What is a stilling basin? What are the different types of stilling basins? What are the functions of (i) chute blocks and (ii) baffle blocks in stilling basins? 7M

**UNIT – II**

3. (a) What is a fall in a canal? Discuss the various considerations according to which the location of a fall is decided. 7M
   (b) What is a cistern element in a fall? Describe briefly the various types of cistern elements. 7M

(OR)

4. (a) Describe the procedure for designing a trapezoid notch fall. 7M
   (b) Explain the design procedure of a straight glacis fall. 7M

**UNIT – III**

5. (a) Why are cross regulators and distributary head regulators provided? List the various functions of a distributary head regulator. 7M
   (b) Explain the principles of design of a distributary head regulator. 7M

(OR)

6. (a) Define an outlet. What are modular, semi modular and non-modular outlets? Explain. 7M
   (b) Explain the terms: 7M
   (i) proportionality
   (ii) sensitivity and
   (iii) flexibility of an outlet.

**UNIT – IV**

7. (a) What is a Cross drainage work? What are the various types of Cross drainage works? 7M
   (b) Explain the selection of suitable type of cross drainage work. 7M

(OR)

8. (a) Classify aqueducts and explain under what circumstances each one is used. 7M
   (b) Explain the method of fixing the waterway of drain in an aqueduct. 7M

**UNIT-V**

9. (a) Explain the purpose of Water Resources development. 7M
   (b) How are the Water Resources development projects classified? Explain. 7M

(OR)

10. (a) Explain the 'Project evaluation' related to a Water Resources development project. 7M
    (b) Explain the terms: (i) Planning strategies and 7M
    (ii) Management strategies.

**Q.P. Code: 254412** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Transportation Engineering – II (CE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

| | | | |
|---|---|---|---|
| 1. | (a) | Give a neat diagram of permanent way on an embankment indicate various components. Briefly describe the functions of each component | 10M |
| | (b) | Define Gauge. What are the popularly used gauges in Indian Railways | 4M |
| | | (OR) | |
| 2. | (a) | What are the functions of sleepers in Railway track ? What are the requirements of good sleepers | 7M |
| | (b) | What is Ballast? What are the different types and enumerate the requirements of Good ballast. | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | What is a Transition curve, what are the different types and what are the requirements for an ideal transition curve. | 7M |
| | (b) | Write a note about (i) Momentum gradient and (ii) Compensated gradient for curvature. | 7M |
| | | (OR) | |
| 4. | (a) | What do you understand negative super elevation? | 4M |
| | (b) | Compute the maximum permissible speed for the following data on a curve of high speed B.G for the following data. Degree of curve = 1.2, Amount of super elevation = 8cm, Length of transition curve = 150 m, Maximum sanctioned speed likely to be 135kmph. | 10M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | What is a Wind rose diagram? What are its types? Explain one | 7M |
| | (b) | Explain the various Surveys to be conducted and the data to be collected for Airport site selection | 7M |
| | | (OR) | |
| 6. | (a) | What are the different corrections to be applied for basic runway length for calculating the final runway length? | 7M |
| | (b) | Give a typical Layout of an airport indicating the Terminal Area and the other air side facilities. What are the various types of Terminal layouts possible for an Airport with reference to the gate positions? | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Based on what factors Harbors are classified? How are they classified? Explain with the help of neat diagrams wherever needed. | 7M |
| | (b) | Why Breakwaters are needed in a harbor ? What are the various types of breakwaters? | 7M |
| | | (OR) | |
| 8. | (a) | Explain any six factors for which a harbour engineer must have consideration while planning and designing a harbor. | 7M |
| | (b) | Suggest the remedies to reduce siltation and erosion in harbour layout. | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | What are the various services that are required for the maintenance of shipping terminals? | 7M |
| | (b) | What is Dredging? Classify the different types of dredging works | 7M |
| | | (OR) | |
| 10. | (a) | Explain briefly about various types of dredgers. | 7M |
| | (b) | Explain various types of break waters | 7M |

**Q.P. Code: 254612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Design and Detailing of Steel Structures (CE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

1. (a) Derive Moment-curvature relationship. 9M
   (b) Explain the salient features in stress-strain diagram of mild steel. 5M

(OR)

2. (a) What are the advantages and disadvantages of welding 4M
   (b) Design the welded connection to connect two plates of width 250 mm and thickness 12 mm for 100 percent efficiency. 10M

**UNIT – II**

3. How to calculate the design strength of a tension member? Explain the steps in detail. 14M

(OR)

4. Design the built-up column with two channels back to back of length 9 m to carry an axial factored load of 1300 kN using Batten system. The column may be assumed to have restrained in position but not in direction at both ends, which are hinged. 14M

**UNIT – III**

5. Design a simply supported beam with effective span of 5.5 m carrying a uniformly distributed load of 35 kN/m (including the self-weight of the beam). Use Fe410 grade steel. 14M

(OR)

6. Determine the design bending strength of ISMB 400@ 558.1 N/m laterally unsupported. The design shear force V is less than design shear strength. The unsupported length of the beam is 3.6 m. Take Fe 410 grade steel, and $\alpha_{LT} = 0.21$ 14M

**UNIT – IV**

7. An ISLB 350 beam is to be connected to a ISHB 300 @ 500 N/m to transfer a load of 150 kN. Design a double plate framed connection. Use welded connections. 14M

(OR)

8. An ISLB 350 transfers an end reaction of 110 kN to the flange of an ISHB 200 @ 400 N/m. Design (i) Unstiffened welded connection and (ii) Stiffened welded connection 14M

**UNIT-V**

9. Design a slab base for a column consisting of ISHB 300 @ 558 N/m. The column carries an axial load of 900 kN. Also design the concrete pedestal for the column, the permissible bearing stress in concrete is 4.5 MPa and safe bearing capacity of the soil is 250 kN/m$^2$. Take the permissible bearing stress in slab base as 185 MPa. 14M

(OR)

10. A column is made of one ISHB 300 @ 588 N/m with one plate 400 mm x 12 mm symmetrically placed on each flange. The column carries an axial load of 200 kN. The column rests on concrete pedestal. The permissible bearing stress in concrete is 4000 kN/m$^2$. Design a suitable gusseted base for the column. No design of welds is required. 14M

**Q.P. Code: 254812** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Design and Detailing of Reinforced Concrete Structures-II (CE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

### UNIT - I

1. A T-beam slab floor of a public building comprises of a slab spanning between ribs spaced at 3.3 m c/c. the effective span of the beam is 6m. The service live load on the floor is 4 kN/sq.m. Using M20 grade concrete and Fe 415 HYSD bars, design one of the intermediate T-beam and slab sketch the details of reinforcement. 14 M

(OR)

2. Design a simply supported circular slab carrying a superimposed load of 4 kN/ $m^2$. The diameter of the circular slab is 5.6 m. Use M20 concrete and Fe 415 steel. Sketch the details of reinforcement. 14 M

### UNIT – II

3. (a) What are additional secondary moments in slender column? How do we include them in the design of braced and unbraced slender columns? 7M

   (b) Explain the design procedure of slender columns as per IS 456 and other design aids. 7M

(OR)

4. Determine the maximum factored load carrying capacity of a square column 450mm x 450mm reinforced with 12 bars of 20mm diameter, uniformly spaced along all the four sides with an effective cover of 50mm. The column is braced against side sway and has unsupported length of 6.0m and effective length factor of 1 about the both axes. Assume M30 mix and Fe415 Steel. 14 M

### UNIT – III

5. Design a rectangular footing of uniform thickness for an axially loaded column of size 300 mm x 600 mm, load on column is 1150 kN. Safe bearing capacity of the soil is 200kN/sq.m. Use M20 concrete and Fe 415 steel. 14 M

(OR)

6. Design a combined trapezoidal footing for two columns A & B spaced 4.0Mm centre to centre. Column A is 300mm X 300mm in size and transmits a load of 750kN. Column B is 350mm X 350mm size and carries a load of 950kN. The maximum length of footing is restricted to 7.0 m only. The safe bearing capacity of a soil may be taken as 150kN/sq.m. Use M20 grade of concrete and Fe415 steel. 14 M

### UNIT – IV

7. Design a T-shaped cantilever retaining wall to retain earth embankment 3.0m high above the ground level. The unit weight of earth is 18 kN/$m^3$ and its angle of repose is 28°, the embankment is horizontal at its top. The safe bearing capacity of a soil may be taken as 180kN/$m^2$ and the coefficient of friction between soil and concrete as 0.45. Use M20 grade of concrete and Fe415 Grade Steel. 14 M

(OR)

8. Design a T-shaped cantilever retaining wall to retain earth embankment 3.6m high above the ground level. The embankment is surcharged at an angle of 18° to the horizontal. The unit weight of the earth is 17N/$m^3$ and its angle of repose is 30°. The safe bearing capacity of a soil may be taken as 160kN/$m^2$ at a depth of 1.2m below the ground. The coefficient of friction between concrete & soil may be taken as 0.50. Use M20 grade of concrete and Fe415 Grade Steel. 14 M

### UNIT-V

9. Design a rectangular water tank of size 2.5m x 6m x 3m, resting on the ground. Bearing capacity of soil may be taken as 150 kN/$m^2$ . Use M25 concrete and Fe 415 steel. 14 M

(OR)

10. Design a circular water tank with a flexible base for 1,20,000 liters capacity. The depth of water in the tank is 5.5m. Use M25 concrete and Fe 415 steel. 14 M

**Q.P. Code: 255012** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Structural Analysis – II (CE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. (a) Differentiate between statically determinate and indeterminate structures. Also find the degree of static indeterminacy for the following structures shown in **fig. 1a** & **Fig1.b** **7M**

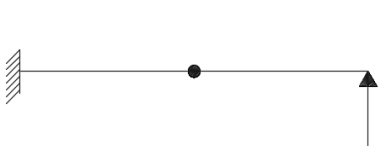


**Fig.1a**

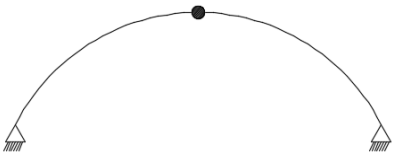


**Fig.1b**

(b) Find the forces in the numbered members of the loaded truss shown in **fig. 2** **7M**

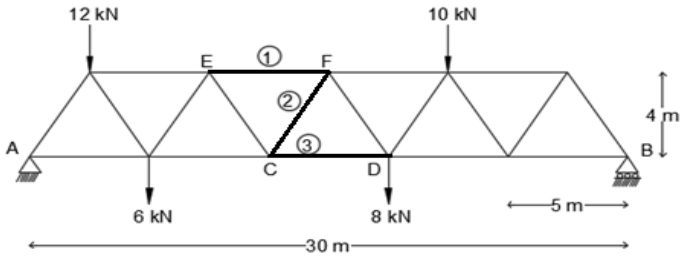



**Fig.2**

(OR)

2. (a) Analyse the loaded truss shown in **fig.3** by method of joints and tabulate the results. **14M**

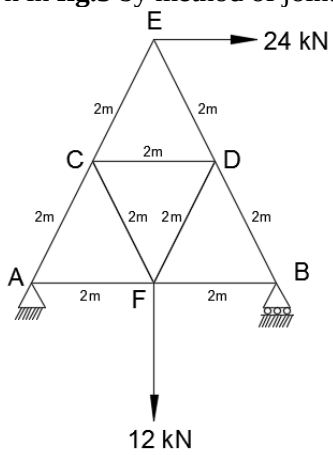



**Fig.3**

**UNIT – II**

3. (a) A 3-hinged parabolic arch has span **16m** and central rise **4m**. It carries a point load of **100kN** @ **4m** from left support. Evaluate reaction components, moment thrust and radial shear at a section **6m** from left support. Take the equation of arch y = 4hx(l-x) with left hand support as origin. Draw BMD **14M**

(OR)

4. A three hinged parabolic arch of span 30m has its left and hinge supports at **12m** and **4m** below crown point. The arch carries a load of 80kN at 4m distance to the left of crown **C** and an **UDL** of **15kN/m** between crown and right support. Find the bending moment under the point load, maximum bending moment on the right portion of the arch. Also find normal thrust and radial shear at the point load. **14M**

## UNIT – III

5. (a) A system of wheel loads moves from left end to right end as shown in **fig.4** on a simply supported beam having a span of **10m**. Calculate the maximum bending moment which can occur at a point 4m from the left end. **7M**

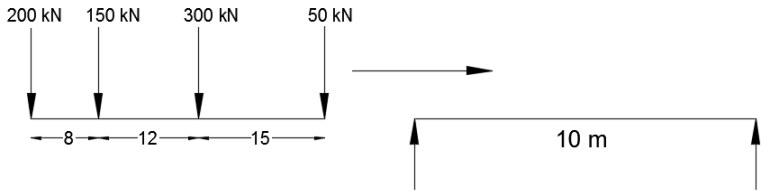



**Fig.4**

(b) Establish the expression for load position to get maximum bending moment at a section which is at distance of '**a**' from left support '**A**' in a simply supported beam AB of span '**L**' and traversed by a **UDL W/mtr** run which is shorter span. **7M**

(OR)

6. (a) A Uniformly distributed load of intensity **32 kN/m** crosses a simply supported span of 60m from left to right. The length of the **udl** is **15m**. Find the value of maximum S.F maximum B.M at a section of **18m** from left end. Also find the absolute value of maximum B.M of the S.F in the section. **14M**

## UNIT – IV

7. (a) Find the shear force at a section **G** for the loaded simply supported beam shown in **Fig.5** by using influence line diagram. Also find shear forces. **7M**

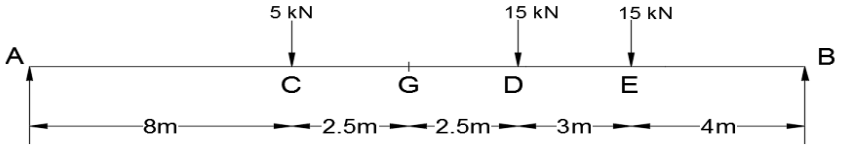



**Fig.5**

(b) Explain the procedure for generating influence line diagrams. **7M**

(OR)

8. (a) Determine the influence line diagram for the forces in the member $U_1U_2$, $U_2U_3$, $L_2L_3$, $U_2L_2$ and $U_2L_3$ for the prat truss as shown in **fig 6.** **14M**

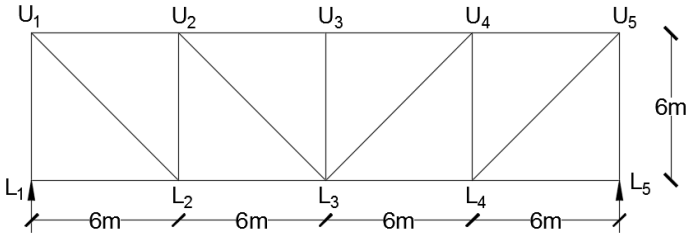



**Fig. 6.**

## UNIT-V

9. (a) Analyse the continuous beam shown in **fig.7** by Flexbility method, where the support B sinks by 5mm. Sketch BMD and SFD. Take EI = 15 x $10^3$ kN-$m^2$. **14M**

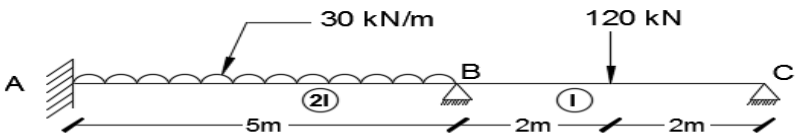



**Fig.7**

(OR)

10. Analyse the continuous beam shown in **fig.8** by using Stiffness matrix method.

(a) **14M**

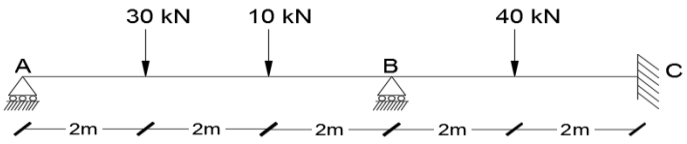



**Fig.8**

**Q.P. Code: 353812** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Power Quality (EEE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | Discuss between power quality, voltage quality and current quality | 7M |
| | (b) | What are the responsibilities of the suppliers and users of electric power? Explain | 7M |
| | | (OR) | |
| 2. | (a) | Write the various IEEE and IEC power quality standards | 7M |
| | (b) | Discuss briefly about CBEMA curve. Explain the events described in the curve | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Discuss the effects of voltage sag and interruption on various electrical equipment. | 7M |
| | (b) | Discuss how transients affect the power quality | 7M |
| | | (OR) | |
| 4. | (a) | Explain briefly about various power quality disturbances | 7M |
| | (b) | Explain the principles of regulating the voltage under power quality disturbances | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | Write short notes on concept of power system qualities under sinusoidal non sinusoidal conditions | 7M |
| | (b) | What are Harmonics? Explain about harmonic sources from commercial loads | 7M |
| | | (OR) | |
| 6. | (a) | Discuss the evaluation procedure of total harmonic distortion | 7M |
| | (b) | What are the devices used for controlling harmonic distortion? Explain their function. | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Discuss the need and importance of power quality bench marking | 7M |
| | (b) | Explain in detail about various systems available for permanent power quality monitoring | 7M |
| | | (OR) | |
| 8. | (a) | Discuss the objectives and standards of power quality monitoring | 7M |
| | (b) | What are the factors to be considered while selecting the instruments used for measurement of power quality | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | | What do you mean by custom power device? List Various types of custom power devices and also discuss the differences among them. Give the need of custom power devices. | 14M |
| | | (OR) | |
| 10. | (a) | Explain how dynamic voltage restorer (DVR) can improve power quality. | 7M |
| | (b) | Explain the principle and operation of unified power quality conditioner. | 7M |

**Q.P. Code: 354212** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Electrical Distribution Systems (EEE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | | What is meant by load modeling and give their characteristics? | 14M |
| | | (OR) | |
| 2. | | Discuss the effect of load factor on the cost of generation in a power system. | 14M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | List various design and operational aspects affecting primary feeder loading and voltage levels. | 7M |
| | (b) | Explain various types of radial primary feeders with diagrams. | 7M |
| | | (OR) | |
| 4. | (a) | How do you analyze a substation service area with 'n' primary feeders? | 7M |
| | (b) | Prove that if the voltage drops are limited, six feeders can carry only 1.25 times as much load as the four feeders. | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | Explain a methodology for optimal location of substation. | 7M |
| | (b) | Discuss different bus bar arrangements used in substations with their merits and demerits. | 7M |
| | | (OR) | |
| 6. | | What is the difference between single bus bar with and without sectionalization arrangement? | 14M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | | What is shunt compensation and explain how power factor can be increased using shunt compensation. | 14M |
| | | (OR) | |
| 8. | | A 750 kVA load has a power factor of 0.75 lag. It is derived to improve the power factor to 0.9 lag. Find the kVAR rating of the capacitor for power factor improvement. | 14M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Explain the role of geographical information system in distribution system automation. | 7M |
| | (b) | Discuss the objectives and benefits of distribution automation. | 7M |
| | | (OR) | |
| 10. | (a) | Write short notes on: (i) Supervisory control. (ii) Alarm processing. | 7M |
| | (b) | Explain how Information Technology is applied to distribution automation. | 7M |

**Q.P. Code: 354412** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Switch Gear & Protection (EEE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. (a) What is a ground wire? What are the requirements to be satisfied by ground wires to provide efficient protection to lines against direct lightning strokes? How do ground wires protect the overhead lines against direct lightning strokes. 7M
   (b) What is arcing ground? Explain its effect on the performance of a power system. 7M

(OR)

2. (a) How will an induced lightning stroke develop traveling waves in the transmission line network? State and explain the methods to protect the line from lightning strokes. 7M
   (b) A surge of 15 kV magnitude travels along a cable towards its junction with an overhead line. The inductance and capacitance of the cable and overhead line are respectively 0.3 mH, 0.4 μF and 1.5 mH, 0.012 μF per km. Find the voltage rise at the junction due to the surge. 7M

**UNIT – II**

3. (a) What are the different types of circuit breaker when the arc quenching medium is the criterion? Mention the voltage range for which a particular types of circuit breaker is recommended. 7M
   (b) Giving reasons, suggest a suitable type of circuit breaker for the following application: 220 kV, 7500 MVA circuit breaker for an overhead line. State the salient features of the circuit breaker suggested. 7M

(OR)

4. (a) Describe the phenomenon of extinction of arc in a dc circuit breaker. Why is it easier to quench an ac arc than a dc arc? 7M
   (b) A circuit breaker interrupts the magnetizing current of a 100 MVA transformer at 220 kV. The magnetizing current of the transformer is 5% of the full load current. Determine the maximum voltage which may appear across the gap of the breaker when the magnetizing current is interrupted at 53% of its peak value. The stray capacitance is 2500 μ F. The inductance is 30 H. 7M

**UNIT – III**

5. (a) Discuss the essential qualities of a protective relay. 7M
   (b) Draw a neat sketch of an induction cup type of relay and discuss its operating principle. 7M

(OR)

6. (a) What are different types of distance relays? Compare their merits and demerits. Discuss their field of applications. 7M
   (b) What is meant by 'directional feature' of a directional overcurrent relay? Describe the construction, principle of operation and application of a directional overcurrent relay. 7M

**UNIT – IV**

7. (a) Explain the abnormal conditions in a large alternator against which protection is necessary? 7M
   (b) An 11 kV, 100 MVA alternator is grounded through a resistance of 5 Ω. The CTs have a ratio 1000/5. The relay is set to operate when there is an out of balance current of 1A. What percentage of the generator winding will be protected by the percentage differential scheme of protection? 7M

(OR)

8. (a) Explain how a generator is protected against earth faults in stator winding. What is the necessity for limiting the fault current in the stator? 7M
   (b) With a suitable diagram explain the connection of CT secondaries for differential protection of star-delta connected power transformer. 7M

**UNIT-V**

9. (a) Explain a scheme of protection for a ring main having three substations and fed from one end. 7M
   (b) Explain the basis of setting three-step distance relays for the first, second and third zones of distance measurement. 7M

(OR)

10. (a) What is meant by 3-zone protection? Describe such scheme of protection for long lines. 7M
    (b) Enumerate different types of carrier-aided distance protection schemes. Briefly explain any one of these schemes. 7M

**Q.P. Code: 354612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: HVDC Transmission (EEE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | Explain the comparison of AC & DC transmission in detail. | **7M** |
| | (b) | Draw the typical layout of HVDC converter station and explain each component. | **7M** |
| | | (OR) | |
| 2. | (a) | With neat sketches explain the different kinds of D.C. links available. | **7M** |
| | (b) | Explain briefly the modern trends in DC transmission | **7M** |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Explain the choice of converter configuration for any pulse number. | **7M** |
| | (b) | Draw the schematic circuit diagram of a Graetz's circuit and explain its principle of operation with waveforms. | **7M** |
| | | (OR) | |
| 4. | (a) | Explain the effect of overlap angle on the performance of converter circuit. | **7M** |
| | (b) | Explain the converter bridge characteristics as inverter. | **7M** |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | Discuss in detail the principle of DC link control. | **7M** |
| | (b) | Explain about the converter control characteristics of HVDC system. | **7M** |
| | | (OR) | |
| 6. | (a) | Explain in detail about equidistant pulse control (EPC) firing angle scheme. Also list the draw backs of this scheme. | **7M** |
| | (b) | Explain about the starting and stopping of a DC link. | **7M** |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Discuss about the over voltages due to disturbances on DC side. | **7M** |
| | (b) | Explain the basic principle of over current protection. | **7M** |
| | | (OR) | |
| 8. | (a) | Derive the expression for short circuit in a bridge, and briefly explain the reasons. | **7M** |
| | (b) | Explain the nature of transient over voltages due to disturbances on DC side | **7M** |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Discuss the need for reactive power control in HVDC power stations. | **7M** |
| | (b) | Mention the various sources of harmonic generation in HVDC systems and suggest methods to eliminate them. | **7M** |
| | | (OR) | |
| 10. | (a) | Give a detailed account of design aspects of following filters:<br>i) single tuned filter ii) double tuned filter | **7M** |
| | (b) | Discuss about DC filters | **7M** |

**Q.P. Code: 354812** **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Advanced Control Systems (EEE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. (a) Compare various types of controllers. 6M
   (b) Consider a UFB system has an OLTF,G(S) = K/ S(S+1)(1+0.2S). Design a Phase Lag compensator to meet the following specification.: a velocity error co-efficient $K_v$=8,and phase margin is greater than or equal to 40 degrees. 8M

(OR)

2. (a) A UFB system has an OLTF,G(S) = 20/ S(S+2)( S +4). Design a PD controller so that the closed loop has a damping ratio of 0.8,and the natural frequency of oscillations as 2 rad/sec. 9M
   (b) Briefly Explain Lead-Lag compensator with Bode plot. 5M

**UNIT – II**

3. (a) Define the terms state space, state variables and state model.what are the advantages of state space representation. 7M
   (b) Obtain the state space representation of the following system ; 7M
   Y(s)/U(s) =2(s+3)/(s+1)(s+2),

(OR)

4. (a) Define the observabilty and explain observability tests for continuous systems. 6M
   (b) 8M

The state equations of a system are given below. Determine the system is completely controllable and observable. $X^* = AX+BU$ and $Y=CX$

Where $A = \begin{bmatrix} -6 & -18 & -6 \\ 2 & 3 & 1 \\ -4 & -8 & -3 \end{bmatrix}$; $B = \begin{bmatrix} 2 \\ -3 \\ 7 \end{bmatrix}$; and $C = \begin{bmatrix} 1 & 3 & 1 \end{bmatrix}$

**UNIT – III**

5. (a) Determine the time response of the following system represented as; 7M
   $X^* = AX+BU$ and $Y=CX$

   Where $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$; $B = \begin{bmatrix} 0 \\ 2 \end{bmatrix}$ and $C = \begin{bmatrix} 0 & 1 \end{bmatrix}$ ; where U(t) is unit step input and initial condition $X(0) = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$

   (b) Expain briefly about the full order and reduced order observers. 7M

(OR)

6. (a) Explain the method of solution of state equations. 7M
   (b) consider the following system represented as; $X^* = AX+BU$ and $Y=CX$ 7M

   Where $A = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$; $B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and $C = \begin{bmatrix} 0 & 1 \end{bmatrix}$ ; where U(t) is unit step input and initial condition $X(0) = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$

   Find the state transition matrix of the system.

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Explain the different characteristics of a non-linear systems? | 7M |
| | (b) | Explain the procedure for determining the stability of nonlinear systems using describing function analysis?. | 7M |
| | | (OR) | |
| 8. | (a) | What are singular points. describe them with relevant equations and sketches. | 7M |
| | (b) | Explain the construction of phase trajectories by phase plane method. | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Explain Liapunov theorems on stability and instability? | 7M |
| | (b) | A linear system is described by the state equation. $X^* = AX$; Where $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$; investigate the stability of this system by using liapunovs theorem. | 7M |
| | | (OR) | |
| 10. | | Explain in detail the following methods. | 7M |
| | | i) Krasovskii's Method,and | 7M |
| | | ii) Variable gradient Method. | |

**Q.P. Code: 355012**

**SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Management Science (EEE & ECE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. Explain 14 principles of management as outline by Henry Fayol. 14M

(OR)

2. (a) Define Management. Explain its Features 7M
   (b) Evaluate line organization 7M

**UNIT – II**

3. Explain SWOT analysis. Analyze how SWOT analysis can be used to evolve appropriate corporate strategy. 14M

(OR)

4. (a) What are the stages in corporate planning process? 7M
   (b) Illustrate product layout and process layout. 7M

**UNIT – III**

5. "HRM seeks to achieve personal and social goals". Explain outline the major functions of HRM.

(OR)

6. (a) Determine the various stock control levels with the following information. normal usage -500 units per day , minimum usage -2400 units per day ,maximum usage -7700 units per day, lead time 10-20 days and EOQ is 8000 units. 7M
   (b) State the objectives of inventory management? 7M

**UNIT – IV**

7. (a) Explain Methods study 7M
   (b) Discuss different types of layouts. 7M

(OR)

8. Elucidate Work Measurement with suitable illustrations. 14M

**UNIT-V**

9. Distinguish between PERT and CPM 14M

(OR)

10. (a) Outline project crashing 7M
    (b) What is project analysis? Explain with appropriate examples 7M

**Q.P. Code: 454012** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Embedded Real Time Operating Systems (ECE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | Define ERTOS? Explain classification of Embedded Systems? | 7M |
| | (b) | What are the various major application areas of Embedded systems? | 7M |
| | | (OR) | |
| 2. | (a) | Explain the Purpose of Embedded Systems? | 7M |
| | (b) | Explain which type of skills required for Embedded Systems designer? | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Explain in detail about Unified Modeling Language (UML)? | 7M |
| | (b) | Briefly explain what are the fundamental issues in hardware and software co-design? | 7M |
| | | (OR) | |
| 4. | (a) | Explain about VLSI and Integrated Circuit Design? | 7M |
| | (b) | Define automation? Explain Electronic Design Automation (EDA) Tools? | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | Differentiate Serial Communication Devices and Parallel communication Devices? | 7M |
| | (b) | Illustrate different types of Wireless Devices? | 7M |
| | | (OR) | |
| 6. | (a) | Write a Short note on Advanced Buses? | 7M |
| | (b) | Elaborately explain Network Protocols in embedded system? | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Define an Operating system? Specify the comparisons between General and Real time OS? | 7M |
| | (b) | Discuss in brief about Multiprocessing and Multitasking? | 7M |
| | | (OR) | |
| 8. | (a) | Write a Short note on OS security issues and their solutions? | 7M |
| | (b) | What is RTOS? How to Choose an good RTOS? | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | | Elaborately explain With neat diagram of an Embedded System for a Smart Card? | 14M |
| | | (OR) | |
| 10. | | With a neat diagram explain Mobile Phone Software for Key Inputs? | 14M |

**Q.P. Code: 454212** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Digital Image Processing (ECE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. (a) Explain the following basic relationships between pixels. 7M
   i) Distance Measures
   ii) Arithmetic/Logic operations
   (b) Explain the following basic transformations digital in image processing 7M
   i) Translation
   ii) Rotation
   iii) Scaling

(OR)

2. (a) Discuss the following tools used in digital image processing 7M
   i) Array Vs matrix operations
   ii) Linear Vs Non-linear operations
   (b) Write the expression to find the number of bits to store a digital image and find the number of bits required to store a 256 X 256 image with 32 gray levels? 7M

**UNIT – II**

3. (a) Determine the kernel coefficients of 2D Walsh transform for N=8 7M
   (b) Explain the properties of Hadamard transform. 7M

(OR)

4. (a) Discuss about KL transform. 7M
   (b) Define discrete cosine transform and explain its properties. 7M

**UNIT – III**

5. (a) Discuss following techniques for image enhancement 7M
   i) Median filtering
   ii) Image subtraction
   iii) Derivative filters
   (b) Explain about color fundamentals in image processing. 7M

(OR)

6. (a) Discuss about image enhancement using histogram processing 7M
   (b) Explain briefly about color models often used in image processing 7M

**UNIT – IV**

7. (a) Explain about Weiner filtering in image restoration 7M
   (b) Explain the different thresholding operations used in image segmentation 7M

(OR)

8. (a) Explain about image restoration model. 7M
   (b) Explain the following terms in image segmentation 7M
   i) Region growing
   ii) Region splitting

**UNIT-V**

9. (a) What is the need of image compression? Explain about Run Length Coding in detail. 7M
   (b) A source emits four symbols {a,b,c,d} with the probabilities 0.4, 0.2, 0.1, 0.3 respectively. Construct arithmetic coding to encode the word "dad" 7M

(OR)

10. (a) Explain about lossy predictive coding 7M
    (b) Obtain the Huffman code for the word "committee" 7M

**Q.P. Code: 454412** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Optical Communications (ECE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | What is the concept of ray theory transmission? Explain with a suitable optical Cable Setup. | 7M |
| | (b) | Write about mode coupling and V number. | 7M |
| | | (OR) | |
| 2. | (a) | Define cut off wave length, mode field diameter? | 7M |
| | (b) | An optical fiber has a NA of 0.20 and a cladding refractive index of 1.59. Determine<br>(i) The acceptance angle for the fiber in water which has a refractive index of 1.33<br>(ii) Critical angle at the core cladding interface. | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Explain various fiber materials | 7M |
| | (b) | Write about scattering losses in an optical fiber | 7M |
| | | (OR) | |
| 4. | (a) | Explain about wave guide & polarization mode dispersion. | 7M |
| | (b) | Explain the mechanical properties of fibers. | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | A multi mode graded index fiber exhibits the pulse broadening of 0.2μs over a distance of 15Km. Estimate,<br>(i) Optimum bandwidth of the fiber<br>(ii) Dispersion per unit length (iii)Band width length product | 7M |
| | (b) | Explain about fiber splicing techniques in detail. | 7M |
| | | (OR) | |
| 6. | (a) | Write about Laser diode to fiber coupling ? | 7M |
| | (b) | Write about Equilibrium numerical aperture? | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Explain quantum efficiency and LED power. | 7M |
| | (b) | Derive laser diode rate equation | 7M |
| | | (OR) | |
| 8. | (a) | Explain briefly about LED structures. | 7M |
| | (b) | Explain the resonant frequencies of Laser diode? | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | What are the principles of the WDM technique? List various advantages. | 7M |
| | (b) | Discuss rise time budget in an optical link with example | 7M |
| | | (OR) | |
| 10. | (a) | Write short note on Eye patterns? | 7M |
| | (b) | Explain link power budget with examples. | 7M |

**Q.P. Code: 454612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Electronic Measurements & Instrumentation (ECE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | Define the terms.<br>(i) Resolution (ii) Error (iii)Lag (iv) Accuracy | 8M |
| | (b) | Discuss the different types of Static errors in a system. | 6M |
| | | (OR) | |
| 2. | (a) | Describe the function of the DC-Voltmeter and multi range voltmeter and explain their operation? | 7M |
| | (b) | Explain the suppression method of Harmonic Distortion Analyzer with a neat diagram. | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | | Describe the construction and principle of Dual Slope Voltmeter. | 14M |
| | | (OR) | |
| 4. | | What is use of digital Tachometer? Explain the working principle with a neat sketch. | 14M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | Draw the simplified block diagram of the oscilloscope and explain in detail? | 8M |
| | (b) | Explain the principle of Dual Beam CRO. | 6M |
| | | (OR) | |
| 6. | (a) | List out the Application of CRO. | 6M |
| | (b) | Understand the calculation of frequency can be measured using a gear wheel method. | 8M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Define:<br>(i) Schering's bridge (ii) Anderson's bridge (iii) Kelvin bridge | 6M |
| | (b) | What are the applications of wheat stone bridge and explain its limitations? | 8M |
| | | (OR) | |
| 8. | (a) | Draw the circuit of a basic Q-meter diagram and explain its principal of operation using a vector diagram? | 10M |
| | (b) | How output frequency is determined in Wien's bridge? | 4M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Briefly explain the working principles and measurement of force by any two nonelectric techniques in transducers? | 10M |
| | (b) | What is inductance transducer? Mention three principles of inductance transducer. | 4M |
| | | (OR) | |
| 10. | (a) | Show and explain the capacitive transducer arrangement to measure angular velocity and what are its limitations? | 8M |
| | (b) | Apply the working principle of transducer to calculate velocity. | 6M |

**Q.P. Code: 454812** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: VLSI Design (ECE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

### UNIT – I

| | | | |
|---|---|---|---|
| 1. | (a) | Explain substrate preparation technique along with neat diagram | 7M |
| | (b) | Explain NMOS fabrication steps in detail. | 7M |
| | | (OR) | |
| 2. | (a) | Discuss the steps involved in Bi-CMOS fabrication in an n-well process | 7M |
| | (b) | List the differences among NMOS, CMOS and Bi-CMOS. | 7M |

### UNIT – II

| | | | |
|---|---|---|---|
| 3. | (a) | Determine the Pull-up to Pull-down ratio for an NMOS inverter driven by another NMOS inverter? | 8M |
| | (b) | Draw the Bi-CMOS inverter with analysis | 7M |
| | | (OR) | |
| 4. | | Explain $I_{DS}$ vs $V_{DS}$ relationships in saturation and non-saturation regions. | 14M |

### UNIT – III

| | | | |
|---|---|---|---|
| 5. | (a) | Explain CMOS design rules for wires, contacts and transistors layout diagrams for CMOS inverters. | 8M |
| | (b) | Draw and explain the significance of various pull up forms. | 6M |
| | | (OR) | |
| 6. | | Design a stick diagram and layout of two input CMOS NAND and NOR gates. | 14M |

### UNIT – IV

| | | | |
|---|---|---|---|
| 7. | (a) | What is meant by sheet resistance RS? Explain the concept of Rs applied to MOS transistors. | 8M |
| | (b) | Explain high density memory elements. | 6M |
| | | (OR) | |
| 8. | (a) | Explain alternate gate circuits in gate level design. | 10M |
| | (b) | Define wiring capacitance. What are the sources of wiring capacitances. | 4M |

### UNIT-V

| | | | |
|---|---|---|---|
| 9. | (a) | Draw and explain the architecture of Field Programmable Gate Arrays. | 7M |
| | (b) | Write short notes on Programmable Logic Arrays. | 7M |
| | | (OR) | |
| 10. | | Explain about system level test techniques? | 14M |

**Q.P. Code: 553212** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Rapid Prototyping (ME)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | What is the role of prototype in product development process? | 7M |
| | (b) | List the advantages of Rapid Prototyping in product design and development. | 7M |
| | | (OR) | |
| 2. | (a) | Discuss briefly on the classification of Rapid Prototyping Processes. | 7M |
| | (b) | How does pattern differ from prototype? Explain process chain of Rapid Prototyping. | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Differentiate Stereo lithography and Selective Laser Sintering in Rapid prototyping. | 7M |
| | (b) | Discuss on data preparation and data files required for Stereo Lithography System. | 7M |
| | | (OR) | |
| 4. | (a) | Discuss on the machine details used for stereo lithography process. | 7M |
| | (b) | What are the process parameters of SLA system that influence the part quality? | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | What are the process parameters of Fusion Decomposition Modeling? | 7M |
| | (b) | Write the applications of Fused Deposition Modeling process. | 7M |
| | | (OR) | |
| 6. | (a) | Explain the path generation in fusion decomposition modeling (FDM). | 7M |
| | (b) | What are the advantages and limitations of FDM process? | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Explain the working principle of Laminated Object Manufacturing. | 7M |
| | (b) | Write a short note on the following<br>i) 3D Printer ii) Object Quadra system | 7M |
| | | (OR) | |
| 8. | (a) | What are the various LOM materials and their typical applications? | 7M |
| | (b) | List out the applications of laminated object manufacturing (LOM)? | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | With a neat sketch explain Selective Laser Sintering. | 7M |
| | (b) | Give examples for Rapid Prototyping softwares and discuss their advantages. | 7M |
| | | (OR) | |
| 10. | (a) | What are the steps involved in production of inserts using 3D Keltool process. | 7M |
| | (b) | Compare various Rapid Prototyping softwares and write their applications. | 7M |

**Q.P. Code: 554212** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Production and Operations Management (ME)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

1. (a) List the objectives of operations management. 7M
   (b) What are the benefits of production and operations management 7M

(OR)

2. (a) Explain flexible production system. 7M
   (b) Explain agile production system. 7M

**UNIT – II**

3. (a) Explain qualitative methods of forecasting. 7M
   (b) A Manager of a restaurant must forecast weekly demand for pizzas so that he can order pizza shells weekly. Recently , demand has been as follows. 7M

| Week | June 2 | June 9 | June 16 | June 23 | June 30 | July7 |
|---|---|---|---|---|---|---|
| Pizzas | 50 | 65 | 52 | 56 | 55 | 60 |

i) Forecast the demand for pizza for June 23 to July 14 by using the simple moving average method with n =3

ii) Forecast the demand using weighted moving average with weights of 0.50, 0.30 and 0.20, with 0.50 applying to the most recent demand.

(OR)

4. (a) Explain various strategies of aggregate planning 7M
   (b) Explain costs associated with aggregate planning 7M

**UNIT – III**

5. (a) Explain product and process layout. 7M
   (b) Explain CRAFT layout system. 7M

(OR)

6. Use Largest candidate rule to solve the following problem and determine balance delay and assume cycle time is 1 min 14M

| Element | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $T_e$(Min) | 0.2 | 0.4 | 0.7 | 0.1 | 0.3 | 0.11 | 0.32 | 0.6 | 0.27 | 0.38 | 0.5 | 0.12 |
| Immediate predecessors | - | - | 1 | 1,2 | 2 | 3 | 3 | 3,4 | 6,7,8 | 5,8 | 9,10 | 11 |

**UNIT – IV**

7. (a) Derive basic inventory model equation? 7M
   (b) An automobile industry requires 3600 special bushes per year. Ordering cost is expected to be Rs.225 per order and carrying cost is estimated at Rs.2 per bush per year. Procurement cost of the bush is Rs.30/unit. The vendor of this bush offers a discount scheme as follows and which scheme is better . 7M

(i) 10% discount per bush is offered if the annual demand is placed in one order

(ii) 5% discount is offered if every year two orders are placed

(OR)

8. Draw a critical path for the following network. Calculate the probability of meeting the schedule for the last event if the schedule time is 30 days. 14M

| Activity | $t_o$ | $t_m$ | $t_p$ |
|---|---|---|---|
| 1-2 | 2 | 5 | 14 |
| 1-6 | 2 | 5 | 8 |
| 2-3 | 5 | 11 | 29 |
| 2-4 | 1 | 4 | 7 |
| 3-5 | 5 | 11 | 17 |
| 4-5 | 2 | 5 | 14 |
| 6-7 | 3 | 9 | 27 |
| 5-8 | 2 | 2 | 8 |
| 7-8 | 7 | 13 | 31 |

**UNIT-V**

9. (a) List assumptions in sequencing 4 M

(b) Determine the optimal sequences of jobs that minimizes the total elapsed time based on the following information, processing time on machines is given in hours and passing is not allowed. 10M

| Job | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| $M_1$ | 3 | 8 | 7 | 4 | 9 | 8 | 7 |
| $M_2$ | 4 | 3 | 2 | 5 | 1 | 4 | 3 |
| $M_3$ | 6 | 7 | 5 | 11 | 5 | 6 | 12 |

(OR)

10. (a) Explain methods used in scheduling 4M

(b) The following table contains information regarding jobs that are to be scheduled through one machine. 10M

| Job | Processing time(days) | Due date |
|---|---|---|
| A | 4 | 20 |
| B | 12 | 30 |
| C | 2 | 15 |
| D | 11 | 16 |
| E | 10 | 18 |
| F | 3 | 5 |
| G | 6 | 9 |

(i) What is First come first served (FCFS) schedule.

(ii) What is Earliest Due date(EDD) Schedule

(iii)(c) What are the mean flow times for each of schedule above.

**Q.P. Code: 554412** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Instrumentation & Control Systems (ME)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

| | | | |
|---|---|---|---|
| 1. | (a) | Sketch and explain generalized measurement system and its functional elements. | 7M |
| | (b) | Define the terms linearity, reproducibility, repeatability and calibration. | 7M |
| | | (OR) | |
| 2. | (a) | State and explain dynamic characteristics of an instrument. | 6M |
| | (b) | Explain: i) Range and span ii) Resolution iii) Calibration iv) Sensitivity | 8M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | Explain the working of piezo-electric transducer for the measurement of displacement. | 7M |
| | (b) | Explain the Mcleod vacuum gauges used for pressure measurement and its Limitations. | 7M |
| | | (OR) | |
| 4. | (a) | What is a thermistor? How is it used for temperature measurement | 7M |
| | (b) | Explain the working of Electrical Resistance thermometer for the measurement of temperature. | 7M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | With the help of neat sketch explain the working of Bubler level indicators. | 7M |
| | (b) | Explain the working of Ultrasonic flow measurement and state its advantages and disadvantages. | 7M |
| | | (OR) | |
| 6. | (a) | List contactless electrical tachometer and explain about Mechanical Tachometers | 8M |
| | (b) | Name the different temperature sensors and their advantages. | 6M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Explain foil strain gauge stating its advantages. | 9M |
| | (b) | State the factors to be considered for the selection of materials used in strain gauge. | 5M |
| | | (OR) | |
| 8. | | Define gauge factor. State the factors affecting gauge factor. | 14M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Describe the working & sling psychrometer used to study the properties of moist air. | 7M |
| | (b) | What is closed loop system? Explain the various elements of it with a block diagram. | 7M |
| | | (OR) | |
| 10. | (a) | With the help of neat sketch explain the working of absorption hygrometer. | 7M |
| | (b) | Explain the method of measuring force using a pneumatic load cell. | 7M |

**Q.P. Code: 554612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Finite Element Methods (ME)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

## UNIT - I

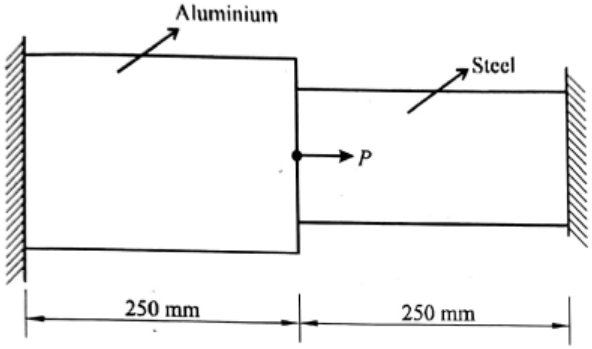
1. (a) Classify the elements used for discretization of domain in FEM 7M
   (b) Explain steps followed in Penalty approach while applying boundary conditions 7M

(OR)

2. (a) List and sketch various types of elements used for discretization of domain 7M
   (b) Explain basic steps of Finite Element method in detail 7M

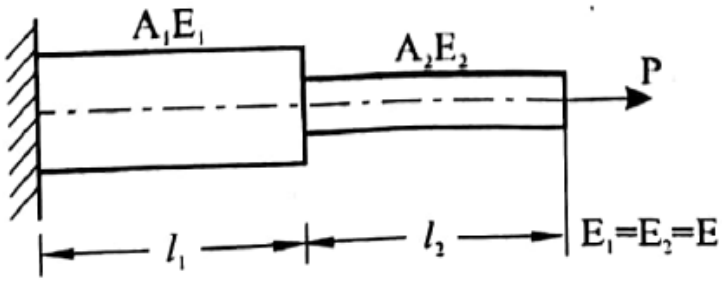
## UNIT – II

3. Determine the stresses in members of structure given below using suitable approach by handling boundary conditions where P = 4KN, $A_1$ = 1.6m, $A_2$ = 0.8m $E_{AL}$ = 80 GPa, $E_{steel}$ = 210 GPa 14M



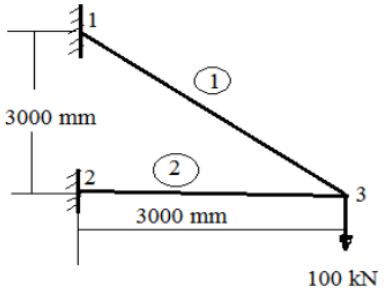

(OR)

4. Determine the stresses in the stepped rod as shown in figure. Find i). Elemental Stiffness matrix 2) Global Stiffness matrix 3). Strain and Stress 14M



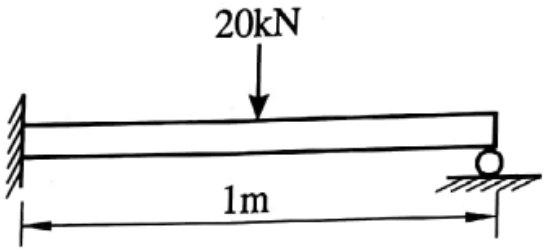

## UNIT – III

5. For the two-bar truss shown in figure, determine the displacements and stress. $A_1$ = 500 $mm^2$, $A_2$ = 1200 $mm^2$, E = 2 x $10^5$ $N/mm^2$ 14M




(OR)

6. A uniform cross sectional beam is fixed at one end supported by a roller at the other end. A concentrated load of 20KN is applied at mid span of the beam as shown in figure. Determine the deflection under load. Take E = 210 GPa, and I = 250 $mm^4$ 14M




**UNIT – IV**

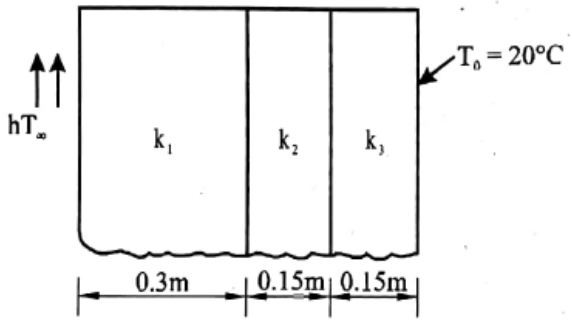
7. Derive strain displacement relation matrix for four noded quadrilateral element 14M

(OR)

8. (a) Explain briefly about isoparametric elements 7M
   (b) Differentiate between CST and LST with respect to the triangular element. 7M

**UNIT-V**

9. Find the temperature distribution in the composite wall as shown in figure, using 1-D elements, use penalty approach of handling boundary conditions. $k_1$ = 20 $W/m^0$ C, $k_2$ = 30 $W/m^0$ C, $k_3$ = -50 $W/m^0$ C, $T_\infty = 800^0$ C, h = 25 $W/m^2$ C 14M




(OR)

10. Discuss the various steps involved in the finite element analysis of a 1-D heat transfer problem with reference to a straight uniform fin 14M

**Q.P. Code: 554812** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Metrology (ME)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT - I**

| | | | |
|---|---|---|---|
| 1. | (a) | With a line diagram explain three main types of fits | 9M |
| | (b) | Find the values of allowance and tolerances for hole and shaft assembly for the following dimensions of mating parts Hole : $25^{+0.05}_{+0.00}$ Shaft $25^{-0.02}_{-0.05}$ | 5M |
| | | (OR) | |
| 2. | (a) | With a line diagram briefly explain about " Hole basis system" and " shaft basis system" | 8M |
| | (b) | Briefly explain about Unilateral tolerance and Bilateral tolerance with suitable example | 6M |
| | | **UNIT – II** | |
| 3. | (a) | What is sine bar? How it is used for angular measurements | 7M |
| | (b) | Determine the slip gauges needed from 45 pieces slip gauge box to a dimension of 53.975 mm | 7M |
| | | (OR) | |
| 4. | | With a neat sketch explain Taylors principle of gauge design by considering wear allowance and gauge tolerance | 14M |
| | | **UNIT – III** | |
| 5. | (a) | Explain the tool makers microscope with a line diagram and its applications | 8M |
| | (b) | Briefly explain about profilometer with a neat sketch | 6M |
| | | (OR) | |
| 6. | (a) | Explain the various elements of a surface texture with a neat sketch | 8M |
| | (b) | In the measurement of surface roughness, heights of 20 successive peaks and valleys measured from a datum are as follows 45,25,40,25,35,16,40,22,25,34,25, 40,20,36,28,18,20, 30,38,25. If these measurements were made over a length of 20mm, determine the C.L.A and RMS values of the surface | 6M |
| | | **UNIT – IV** | |
| 7. | | Describe how you would perform alignment tests on lathe at any seven positions with a line diagram | 14M |
| | | (OR) | |
| 8. | (a) | What are the various methods of measuring effective diameter? Briefly explain about three wire method with a neat sketch? | 7M |
| | (b) | Explain the various types of errors found in screw? State their causes ? | 7M |
| | | **UNIT-V** | |
| 9. | (a) | Explain the working principle of Parkinson gear tester ? | 7M |
| | (b) | State the various sources of errors in manufacturing gears ? | 7M |
| | | (OR) | |
| 10. | (a) | What are the advantages and disadvantages of pneumatic comparators | 6M |
| | (b) | With a neat sketch explain the working principle of electrical comparators with a neat sketch | 8M |

**Q.P. Code: 555012** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: CAD/CAM (ME)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. Define CAD and discuss the applications of computers for the design benefits of CAD? 14M

(OR)

2. (a) Give the details of various display devices that are used for displaying graphics information? 7M
   (b) What are the types of printers that would be useful for printing graphic information? 7M

**UNIT – II**

3. (a) Explain the importance of clipping. Give the details of the methods used for line clipping? 7M
   (b) The two endpoints of a line segment have coordinates (1,3) and (3,6) if it is scaled to twice its present size, write the transformation matrix and the coordinates of the new endpoints. 7M

(OR)

4. What is meant by Transformation and Explain 2-D transformations with suitable examples? 14M

**UNIT – III**

5. (a) Discuss the concept of B- Rep with an example? 7M
   (b) Explain the concept of the three basic Boolean operations used in solid modeling. 7M

(OR)

6. Describe the method of defining the Bezier curve and give its advantages in CAD applications? 14M

**UNIT – IV**

7. (a) Explain the Opitz coding system generally used in group technology? 7M
   (b) What is an FMS? Explain in detail the basic components of FMS? 7M

(OR)

8. Discuss the applications of robots in manufacturing and material handling? 14M

**UNIT-V**

9. (a) Give a brief description of capacity planning in a manufacturing organization? 7M
   (b) Explain MRP with a block diagram? 7M

(OR)

10. What is computer aided process planning? Discuss variant process planning in detail with an example? 14M

**Q.P. Code: 653612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Internet of Things (CSE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | Define IoT? Explain the History of IoT and its Characteristics? | 7M |
| | (b) | Write about IoT enabling technologies in detail? | 7M |
| | | (OR) | |
| 2. | | Explain briefly about Logical design of IoT and its protocols with help of block diagram? | 14M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | | Determine and explain the IoT-levels for designing Structural Health Monitoring System? | 14M |
| | | (OR) | |
| 4. | | Describe the types of data generated by a forest fire detection system? Elaborate about the alternative approaches for storing the data. What type of analysis is required for forest fire detection from the data collected? | 14M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | Differentiate between Software Defined Networking (SDN) and Network Function Virtualization (NFV)? | 8M |
| | (b) | List out the difference a physical entity and virtual entity? | 6M |
| | | (OR) | |
| 6. | | List out the various steps involved in the IoT system design methodology with examples? | 14M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | | Elaborate in detail about Python Data Types and Data Structures? | 14M |
| | | (OR) | |
| 8. | (a) | In brief, Explain the following features in Python:<br>i) Functions ii)) Modules iii) File Handling | 7M |
| | (b) | Write a Python program on:<br>**i) Find the Sum of the Digits of the Number Recursively**<br>**ii) Create a function to read the contents of a file in reverse order** | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Discuss about various interfaces of Raspberry Pi? | 7M |
| | (b) | How Raspberry Pi differs with Arduino? Explain? | 7M |
| | | (OR) | |
| 10. | (a) | Write a python script to interface LED with Raspberry Pi? | 7M |
| | (b) | Illustrate the use of GPIO pins in Raspberry Pi? | 7M |

**Q.P. Code: 654212** **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Computer Graphics (CSE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | | Write about Graphical User Interfaces | 14M |
| | | (OR) | |
| 2. | | Explain Random Scan Systems | 14M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | | Sutherland – Hodgeman polygon clipping algorithm | 14M |
| | | (OR) | |
| 4. | (a) | Explain Mid-Point algorithm | 10M |
| | (b) | Explain the process of Pattern filling | 4M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | | Write about 2D transformations | 14M |
| | | (OR) | |
| 6. | | Explain the process of converting Window to view-port transformation | 14M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | | What is Projections. Explain Spatial –Partitioning Representations. | 14M |
| | | (OR) | |
| 8. | | Explain the Color models for raster graphics | 14M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | | What is Atmospheric attenuation | 14M |
| | | (OR) | |
| 10. | | Explain Animation languages | 14M |

**Q.P. Code: 654412** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

**B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021**

***SUB: Software Testing (CSE)***

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | What is Testing? Write about goals of testing? | 7M |
| | (b) | Explain the consequences of bugs in detail? | 7M |
| | | (OR) | |
| 2. | (a) | Explain the applications of path testing? | 7M |
| | (b) | Explain the Taxonomy of Bugs | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | | Explain node reduction procedure in detail. | 14M |
| | | (OR) | |
| 4. | | Explain the different strategies in dataflow testing? | 14M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | | Explain in detail about the Decision Tables? | 14M |
| | | (OR) | |
| 6. | | Explain Nice and Ugly domains in detail? | 14M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | | What are the Transaction flow testing Techniques? Explain. | 14M |
| | | (OR) | |
| 8. | | What is state graph? Differentiate between good and bad state graph? | 14M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | | Explain the power of a matrix in detail? | 14M |
| | | (OR) | |
| 10. | | Describe the basic principles of graph matrix? | 14M |

**Q.P. Code: 654612** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Artificial Intelligence (CSE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

1. (a) What is an AI? What is the Role of Knowledge? 7M
   (b) Explain the design issues of search programs? 7M

(OR)

2. (a) Give an example of a problem for which breadth-first search would work better than depth-first search. 7M
   (b) Give an example of a problem for which depth-first search would work better than breadth first search. 7M

**UNIT – II**

3. (a) A problem solving search can proceed either forward or backward. What factors determine the choice of direction for a particular problem? 7M
   (b) Where to require Matching and explain what kind of matching required between each states? 7M

(OR)

4. (a) Assume the following facts: 7M
   - Steve only likes easy courses
   - Science courses are hard
   - All the courses in the basket weaving department are easy.
   - BK301 is a basketweaving course

   Use resolution to answer the question, "What course would Steve like?"
   (b) How to apply resolution in predicate logic? 7M

**UNIT – III**

5. (a) Try to formulate the ABC murder story in preduate logic and describe how far we can get? 7M
   (b) Solve the medical reasoning problem with an ATMS 7M

(OR)

6. (a) Explain the Bayesian networks? 7M
   (b) Explain justification based truth maintenance systems? 7M

**UNIT – IV**

7. (a) Define the value of a multiple-valued slot S of class C to be the union of the values that are found for S and all its generalizations at C and all its generalizations. Modify your technique to allow a class to exclude specific values that are associated with one or more of its superclasses. 7M
   (b) Explain the knowledge representation techniques? 7M

(OR)

8. (a) How would you classify and represent the various types of triangles? 7M
   (b) Explain the conceptual dependency? 7M

**UNIT-V**

9. (a) Explain Minimax search procedure? 7M
   (b) What are the components of a planning system? 7M

(OR)

10. (a) Explain nonlinear planning using constraint posting 7M
    (b) Explain the hierarchical planning system? 7M

**Q.P. Code: 654812** | **SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Cloud Computing (CSE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | List and explain the requirements for cloud services. | 7M |
| | (b) | Compare and contrast the Mobile Computing and Quantum Computing | 7M |
| | | (OR) | |
| 2. | (a) | What is meant by Parallel Computing? Explain the Parallel Computing. | 7M |
| | (b) | Discuss the Need for Cloud Computing. | 7M |
| | | **UNIT – II** | |
| 3. | (a) | Describe several approaches of cloud migration. | 7M |
| | (b) | Explain the Phases of Cloud Migration in detail. | 7M |
| | | (OR) | |
| 4. | (a) | With the help of neat diagram, explain the computer application evolution. | 7M |
| | (b) | Elaborate the Network Connectivity in Cloud Computing. | 7M |
| | | **UNIT – III** | |
| 5. | (a) | List and explain the advantages and disadvantages of the public cloud. | 7M |
| | (b) | Discuss the Pros and Cons of IaaS. | 7M |
| | | (OR) | |
| 6. | (a) | Explain the various types of the issues of the Community Cloud. | 7M |
| | (b) | Illustrate the Platform as a Service. | 7M |
| | | **UNIT – IV** | |
| 7. | (a) | Which programming model allows runtime code replacement? Discuss | 7M |
| | (b) | Explain the different SaaS development and deployment models with neat diagrams. | 7M |
| | | (OR) | |
| 8. | (a) | List and explain the main reasons for using transactions in Orleans. | 7M |
| | (b) | Is it wise to choose the SaaS delivery model for all kinds of applications? Justify your answer. | 7M |
| | | **UNIT-V** | |
| 9. | (a) | Explain the Architecture of Classical Data Centers. | 7M |
| | (b) | Give a brief note on Microsoft Assessment and Planning Toolkit. | 7M |
| | | (OR) | |
| 10. | (a) | Elaborate the Storage and Networking Infrastructure. | 7M |
| | (b) | Discuss the Amazon Simple Queue Service. | 7M |

**Q.P. Code: 655012**

**SET - 2**

# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

## B. Tech. VII Sem. (R15) Supplementary Examinations of September – 2021

## *SUB: Big Data Technologies (CSE)*

**Time: 3 Hours** **Max. Marks: 70**

**Answer any FIVE Questions choosing one question from each unit.**
**All questions carry Equal Marks.**

**UNIT – I**

| | | | |
|---|---|---|---|
| 1. | (a) | What is Big Data? Why Big Data is important? | 7M |
| | (b) | Explain about VMware installation of Hadoop. | 7M |
| | | (OR) | |
| 2. | (a) | What is the problem storing the data in hard drives? Analyse it's solution. | 7M |
| | (b) | Write short note on comparison of Hadoop with other systems. | 7M |

**UNIT – II**

| | | | |
|---|---|---|---|
| 3. | (a) | List any five HDFS commands and explain each command with an example | 7M |
| | (b) | Explain different types of Hadoop filesystems | 7M |
| | | (OR) | |
| 4. | (a) | Write a java programs to create a directory in HDFS and delete a directory from HDFS. | 6M |
| | (b) | Explain data flows between client interfacing, the namenode, datanode when reading data from HDFS. | 8M |

**UNIT – III**

| | | | |
|---|---|---|---|
| 5. | (a) | What is the need of combiner function in MapReduce? Explain with example. | 8M |
| | (b) | Explain about MapReduce Web UI. | 6M |
| | | (OR) | |
| 6. | (a) | Analyzing the data with Unix tools. | 7M |
| | (b) | Distinguish between the old and new versions of Hadoop API for mapreduce. | 7M |

**UNIT – IV**

| | | | |
|---|---|---|---|
| 7. | (a) | Discuss about map side and reduce side joins. | 8M |
| | (b) | How Hadoop works better with a small number of large files than a large number of small files. | 6M |
| | | (OR) | |
| 8. | (a) | Illustrate a job run in Classic MapReduce. | 7M |
| | (b) | Explain general form of map and reduce functions in Hadoop MapReduce. | 7M |

**UNIT-V**

| | | | |
|---|---|---|---|
| 9. | (a) | Write a short note on Hive Shell. | 7M |
| | (b) | Write a MapReduce application to loading data into an HBase table | 7M |
| | | (OR) | |
| 10. | (a) | List the Hive data types. Explain each data type. | 8M |
| | (b) | Explain Meta store configurations in Hive. | 6M |