DIPLOMA ENGINEERING
MODEL PRACTICAL QUESTION PAPER

DIPLOMA ENGINEERING (COMMON)

FIRST YEAR – FIRST SEMESTER

➢ COMPUTER APPLICATIONS LAB

1. Carry out the following operations using Windows XP Operating Systems
   (a) Restoring files and folders from Recycle bin
   (b) Creating short cut for folder file.
   (c) Finding a file or folder by name

2. Carry out the following operations using Windows XP Operating System
   (a) Copying files into CD / DVD
   (b) Switching between applications
   (c) Making the taskbar wider and hiding the taskbar

➢ WORKSHOP PRACTICE

   (a) SHEET METAL - Cylinder
   (b) FITTING PRACTICE - V-Joint

FIRST YEAR – SECOND SEMESTER

➢ PHYSICS

1. Determine the refractive index of the material of the prism using Spectrometer
2. Determine the specific heat capacity of the water by Joule’s calorimeter.
3. Draw the voltage-current Characteristics in forward bias and find the forward resistance and knee voltage from the graph
4. Verify the laws of resistances by Ohm’s Law

➢ CHEMISTRY PRACTICAL

1. Determine of Ca++ and Mg++ hardness of water using EDTA solution.
2. Determine alkalinity of water sample.
3. Determine the viscosity of lubricant by Redwood viscometer.
4. Determine strength of HCl solution by titrating it against NaOH solution conductometrically
DIPLOMA IN MECHANICAL ENGINEERING

SECOND YEAR - THIRD SEMESTER

➢ ENGINEERING MACHINES

1. Determine the Coefficient of discharge of a Venturimeter
2. Performance test on a Centrifugal Pump

➢ WORKSHOP-I

1. Foundry:
   - T – Joint Pattern
   - Arc Welding
     - Butt joint (Material: 25mm X 6mm Ms Flat)
2. Foundry:
   - Tumbles Pattern
   - Gas Welding
     - Lap joint (Material: 25mm X 3mm Ms Flat)

SECOND YEAR – FOURTH SEMESTER

➢ THERMODYNAMICS

1. Conduct the test on the given I.C engine and prepare the heat balance sheet
2. Determine the Kinematic viscosity and absolute viscosity of given lubricating oil at different temperatures using Redwood Viscometer

➢ WORKSHOP – II

1. Produce cross cut in the given work piece in the shaper
2. Make thread and knurling on the work piece
THIRD YEAR – FIFTH SEMESTER

➤ METROLOGY LAB

1. Determine the thickness of ground MS flat to an accuracy of 0.02 mm using vernier caliper.
2. Determine the thickness of ground MS plates using slip gauges.
3. Test surface grinding machine alignments and prepare a test chart.

➤ WORKSHOP - III

1. Explain the construction and working principles of milling machine and its cutting tools and work holding devices.
2. Make a step turning and drilling in the given MS round rod using semi-automatic lathe
3. Machine a square rod in the given MS cylindrical rod using planer machine

THIRD YEAR – SIXTH SEMESTER

➤ CAD/CAM LAB

1. Model and assemble the strap joint of Gib& cotter and also convert the 3D model into different views with Bill of materials.
2. Model the given object using the Extrusion feature as per the dimensions given.
   Description of Extrusion Feature:
   Base Feature:
   The first feature that is created.
   The foundation of the part.
   The base feature geometry for the box is an extrusion.
   The extrusion is named Extrude1.
3. Model the given object and construct rib portion in it.
   Description of RIB Feature:
   Command Manager: Features > Rib
   Menu: Insert > Features > Rib
   Toolbar: Features > Rib
DIPLOMA IN ELECTRICAL & ELECTRONIC ENGINEERING

SECOND YEAR – THIRD SEMESTER

➢ ELECTRONIC DEVICES LAB

1. Write about VI Characteristics of Regulator and JFET Characteristics
2. Explain with neat diagram LC filter and Negative feedback amplifier

➢ ELECTRICAL MACHINES

1. Perform the load test on a three phase transformer
2. Predetermine the efficiency of a DC machine by Swinburne’s Test

SECOND YEAR – FOURTH SEMESTER

➢ IC LAB

1. Draw the equivalent circuit of the 3φ induction motor by conducting no load and blocked motor test
2. Calibrate the given single phase energy meter using a standard wattmeter.

➢ ELECTRICAL MACHINES-II

1. Conduct load test on 3 phase slip ring induction motor and plot output Vs efficiency, output Vs torque, output Vs slip, output Vs line current, output Vs power factor.
2. Draw the load characteristics of single phase alternator by direct load test.
THIRD YEAR – FIFTH SEMESTER

➤ CONTROL OF ELECTRICAL MACHINES LAB

1. Construct and test a control circuit for automatic rotor resistance starter.
2. Construct and test a control circuit for automatic star delta starter.

➤ MICRO CONTROLLERS LAB

1. Write and execute an ALP for running a stepper motor in forward and reverse directions.
2. Write and execute an ALP for displaying a character of PASS in a four digit seven segment multiplexed display.
3. Write and execute an ALP for converting an analog signal to its equivalent digital signal and store the result in memory location 4200H

THIRD YEAR – SIXTH SEMESTER

➤ POWER ELECTRONICS LAB

1. Determine the characteristics of SCR and study the operation of Single Phase Single Pulse Converter using SCR.
2. Construct the Single Phase AC Control Circuit using TRIAC for various values of firing angle.
3. Determine the characteristics of TRIAC.
4. Determine the characteristics of MOSFET & IGBT
DIPLOMA IN CIVIL ENGINEERING
SECOND YEAR – FOURTH SEMESTER

➢ CAD IN CIVIL ENGINEERING LAB

1. Draw the given drawings in Computer and take print out of all drawings in A4 sheet using Inkjet / laser printer or plotter and produced in file forms as record.
   1. Section of semi-circular Arch
   2. Elevation of door, partly paneled and partly glazed

2. Draw the given drawings in Computer and take print out of all drawings in A4 sheet using Inkjet / laser printer or plotter and produced in file forms as record. Steel Structures: Cross section of I, Channel, T, Angle and Tubular section, Compound Beams

3. Draw the building drawing using available CAD software
   Plan, Section and Elevation of Double bed roomed building (R.C.C. Roof)

4. Draw the building drawing using available CAD software
   Plan, Section and Elevation of a Workshop with steel columns, Steel roof truss and Metal sheet Roofing of about 300 m² area.

➢ SURVEYING LAB - II

1. Determine gradient of given length of road by Tachometric survey

2. Set out simple circular curve by offsets from chord produced method

3. Determine multiplying and additive constant of given Tachometer

4. Describe the working of Mirror Stereoscope.
THIRD YEAR – FIFTH SEMESTER

CAD IN CIVIL ENGINEERING LAB-II

1. A septic tank for a small colony of 200 persons with average daily sewage flow of 100 liters per head per day. Assume detention period of 12 hours. Draw to a suitable scale the following views.
   1. Sectional plan of septic tank and dispersion trench.
   2. Sectional elevation of septic tank and dispersion trench.

2. The following are the details of a doubly reinforced rectangular partially fixed beam supported on brick walls of size 300 mm width:
   1. Effective span for the beam 6300 mm partially fixed.
   2. Size of the beam is 300 mm x 750 mm (overall) and effective depth is 300 mm.
   3. Tension bars, 6 bars of 22 mm dia. Fe 415, 2 bars are cut off at a distance of 820 mm from the centre of supports.
   4. Compression bars, 2 bars of 20 mm dia, Fe 415.
   5. 8 mm dia. 2 legged vertical stirrups at 250 mm C/C throughout the length. The stirrups are Fe 250.

3. Draw to a suitable scale.
   (a) The plan showing the arrangement of bars.
   (b) The longitudinal section showing the details of reinforcements fully.
   (c) Enlarge cross-sectional view of the beam showing the reinforcement details.
   (d) Prepare the bar bending schedule.

4. Lean Concrete thk-75, Clear Cover-65, Base Concrete-500 thick, Height of abutment- around 7m, Slopes of abutment 1:3, 1:4, 1:12, 1:1.75, Concrete capping- 3.50 thick, Deck slab- 100 – 120 thick

   Draw the deck slabs and beams using AutoCAD

5. The following are the details of a simply supported one way slab.
   1. Clear dimension of a room : 3 m x 8 m
   2. Width of supporting walls : 300 mm
   3. Total thickness of slab : 120 mm
   4. Clear cover : 15 mm
CONSTRUCTION LAB

1. Set out foundation plan on the ground for a load bearing structure by centre line method.

2. Determine the compressive strength of the given concrete cubes.

3. Determine the maximum percentage of bulking.

4. Sketch arrangement of bar for column and footing and prepare bar bending schedule. Know the technique involved during the arrangement of reinforcement.

THIRD YEAR – SIXTH SEMESTER

COMPUTER APPLICATION IN CIVIL ENGINEERING LAB

1. How will you use Linear Programming to find out the least expensive way to Make Crash Decisions?

2. How should ongoing costs be monitored to try to keep the project within budget?

3. Carry out the analysis and design of RCC structures (single storey buildings, school etc) using STAAD PRO.

4. You are given the information about a project consisting of 6 activities

<table>
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<th>Activity</th>
<th>Immediate Predecessors</th>
<th>Estimated Duration</th>
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<tr>
<td>A</td>
<td>-</td>
<td>5 Months</td>
</tr>
<tr>
<td>B</td>
<td>-</td>
<td>1 Month</td>
</tr>
<tr>
<td>C</td>
<td>B</td>
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<tr>
<td>D</td>
<td>A, C</td>
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<td>E</td>
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<td>6 Months</td>
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<tr>
<td>F</td>
<td>D, E</td>
<td>3 Months</td>
</tr>
</tbody>
</table>

a. Construct the project network for this project.

b. Find the earliest times, latest times and slack for each activity. Which of the paths is a critical path?

c. If all other activities take the estimated amount of time, what is the maximum duration of activity D without delaying the completion of the project?