

Register Number:

9157

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

C Part-time

(FIRST SEMESTER)

PCLEC-102.SURVEYING

(New Regulation)

5)

(Time: 3 Hours)

Maximum: 60 Marks

*Answer any ONE FULL question from each unit
All questions carry equal marks*

UNIT-I

1. The constant for an instrument is 1200 and the value of additive constant is 0.4m. Calculate the distance from the instrument to the staff when the micrometer readings are 6.262 and 6.258, the staff intercept is 2.5m and the line of sight is inclined at $+6^{\circ} 30'$, the staff being held vertically .
2. Observations were taken with a tacheometer having additive constant equal to zero and multiplying constant equal to 100 and an intercept of 0.685 m with a vertical angle of 12° was recorded on a staff believed to be vertical. The staff which was 3.5m long was 100mm out of plumb leaning backward away from the instrument. Compute the error in the horizontal distance.

UNIT-II

3. What are the common difficulties in setting out simple curves? Describe briefly the method employed in overcoming them.
4. Calculate the ordinates at 5m distances for a circular curve having a long chord of 40 meters and a versed sine of 2m.

UNIT-III

5. Discuss the effect of phase in sighting a sun signal and show with sketches how it may be eliminated or reduced.
6. What is meant by the eccentricity of signal? How would you correct the observation when made upon an eccentric signal?

UNIT-IV

7. The following values were recorded for a triangle ABC, the individual measurements being uniformly precise.

$$A = 62^{\circ} 28' 16'' \text{ ; 6 obs}$$

$$B = 56^{\circ} 44' 36'' \text{ ; 8 obs}$$

$$C = 60^{\circ} 45' 56'' \text{ ; 6 obs}$$

Find the correct values of the angles.

8. Adjust the angles α and β , observations of which give

$$\alpha = 20^{\circ} 10' 10'' \text{ weight 6}$$

$$\beta = 30^{\circ} 20' 30'' \text{ weight 4}$$

$$\alpha + \beta = 50^{\circ} 30' 50'' \text{ weight 2}$$

UNIT-V

9. Explain the following terms.
 - i) Equation of time
 - ii) Celestial time
 - iii) Refraction
 - iv) Sidereal time
10. Draw a diagram to show the celestial sphere for a point $15^{\circ}N$, $75^{\circ}E$, showing the horizon, meridian, Zenith, pole and celestial equator.

- b) What are the various types of resistors available? Discuss them in brief. (5)
10. A resistance of 100Ω is connected in series with a $50\mu\text{F}$ capacity to a supply of 200V, 50Hz. Find the following; (10)
- a) Impedance.
 - b) Current
 - c) Power factor
 - d) Phase angle
 - e) Voltage across resistor and across capacitor.
- Draw the phasor diagram for the above.

UNIT-II

11. a) What are the different types of wiring? (4)
- b) What is the need for earthing? Give the basic principle of earthing. (6)
12. a) Compare overhead and underground system. (5)
- b) How is electrical energy advantageous over other forms? Give its applications. (5)
-

Register Number:

8522

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2011

(COMMON TO ALL BRANCHES)

(SECOND SEMESTER)

CLEC-204. BASIC ENGINEERING

Any!

[Time : 3 Hours

Maximum : 60 Marks

Answer any one full Question from each unit

PART-A: (CIVIL)

UNIT-I

1. a) Explain in detail, the functions of Civil Engineer.
- b) What are the requirements for a stone which is to be used as a building material?
- c) Describe the properties and uses of Portland cement and explain the process of setting action of cement.
- a) Explain the term workability. What are the factors affecting workability? Briefly explain the tests for determining workability.
- b) What are the essential requirements of a good foundation?

- c) Describe briefly the methods of improving the bearing capacity of the soil.

UNIT-II

- 3. a) What is the importance of roads in the development of a country?
- b) How can roads be classified according to their location and function?
- c) Draw a neat sketch of the cross section of a gravity dam and give the forces acting on it.
- 4. a) What are the important physical, chemical, Biological characteristics of water?
- b) Define Sewage, sewer, sewerage.
- c) What are the objectives of waste water treatment? Explain the working principle of septic tank.

PART-B: (MECHANICAL)

UNIT-I

- a) Explain with the help of a diagram the constructions and working of fire tube boiler
- b) Distinguish between fire tube and water tube boiler.
- c) What is the purpose of fusible plug? Explain

- a) Why two stroke engines are preferred for two wheelers.
- b) Explain the essential features and main function of a gas turbine power plant with neat diagram.

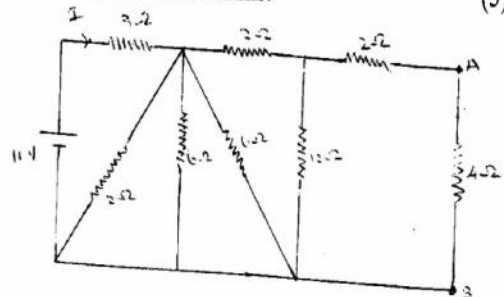
UNIT-II

- a) "Lathe is a versatile machine tool"-Discuss.
- b) How an arc is generated in arc welding?
- c) Differentiate rolling from forging process.
- a) Explain any one quick return mechanism in detail.
- b) Which drives gives max life efficiency? Explain in detail.
- c) Pneumatic drive-Explain with example.

PART-C: (ELECTRICAL)

UNIT-I

- a) Determine the current I in the circuit shown. All resistances are in ohms. (5)



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B.E. DEGREE EXAMINATION, 2011

(COMMON TO ALL BRANCHES)

(FIRST YEAR)

103. ENGINEERING PHYSICS

(*New Pattern*)

(*For the students joined during 2008-09 and
after*)

May]

[Time : 3 Hours

Maximum : 60 Marks

PART – A (10 × 2 = 20)

Answer ALL questions.

All questions carry equal marks.

1. What is Piezo electric effect?
2. Define absorption coefficient. Give its merits.
3. Give the difference between stimulated and spontaneous emission of radiation.

Turn Over

4

- (b) Explain in brief about powder method of crystal structure analysis. (4)

UNIT – IV

17. (a) Derive internal field of a solid under external field. (4)
- (b) Using above equation, derive Clausius-Mosoti equation. (4)
18. (a) What is meant by local field in dielectric. (2)
- (b) Discuss different types of active dielectrics along with their applications. (6)

UNIT – V

19. (a) What is the chain reaction in nuclear fission? (4)
- (b) Describe on what factors does chain reaction depends. (4)
20. (a) What are matter waves? (2)
- (b) Show that de-Broglie wavelength of a particle of momentum P is $\frac{\lambda}{P}$. (6)

4. What is meant by polarization of light?
5. What are X-Rays? How they are produced?
6. How colour centres are formed in a crystal.
7. Distinguish between conductor and semiconductor on the basis of electrical conductivity.
8. List the types of biomaterials.
9. Differentiate nuclear fission and nuclear fusion.
10. What are eigen values and eigen functions?

PART - B (5 × 8 = 40)

*Answer any FIVE questions,
choosing ONE from each unit.
All questions carry equal marks.*

UNIT - I

11. (a) Define Young's modulus of a beam. (2)
- (b) How to determine the Young's modulus of a rectangular beam by subjected it to uniform bending? (6)

12. (a) What is magnetostriction effect? (2)
- (b) What are the physical parameters of the ultrasonic waves that can be determined using acoustic grating experiment? (6)

UNIT - II

13. (a) What are the conditions for laser action? (2)
- (b) Describe with a neat diagram, the construction and working of He-Ne laser. (6)
14. (a) What do you understand by the term polarisation? (2)
- (b) What are the essential parts of photo elastic bench? Explain briefly. Write few uses. (6)

UNIT - III

15. (a) Define packing factor. (2)
- (b) Calculate the atomic packing factor of HCP. (6)
16. (a) What are X-Rays? How they are produced. (4)

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B.E. DEGREE EXAMINATION, 2011

(COMMON TO ALL BRANCHES)

(FIRST YEAR)

105. ENGINEERING MECHANICS

(*New Pattern*)

(*For the students joined during 2007-08 and
after*)

May] [Time : 3 Hours

Maximum : 60 Marks

PART – A (10 × 2 = 20)

Answer ALL questions.

All questions carry equal marks.

1. What are the fundamental units and derived units?

Turn Over

2. Draw the free body diagram for the space diagram shown in figure -1.

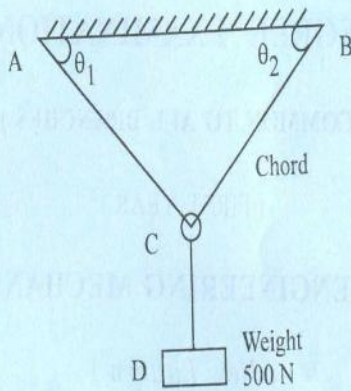


Figure - 1

3. Locate the point where the system of forces given in figure - 2 is converted into a single force and zero couple. Also, find the magnitude of the single force.

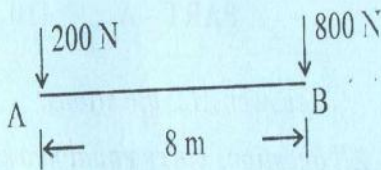


Figure - 2

4. What do you understand by a rigid body?
 5. State the Varignon's theorem of moments.
 6. Define the centroid of an area.

7. State the perpendicular axis theorem.
 8. Name the types of stresses that are produced when a compression helical spring is loaded.
 9. What is a lever? What do you understand by leverage?
 10. How is the lead angle of screw jack obtained?

PART - B (5 × 8 = 40)

Answer FIVE questions, choosing ONE from each unit.

All questions carry equal marks.

UNIT - I

11. Determine the magnitude and direction of the resultant of the forces acting on the hook shown in figure - 3.

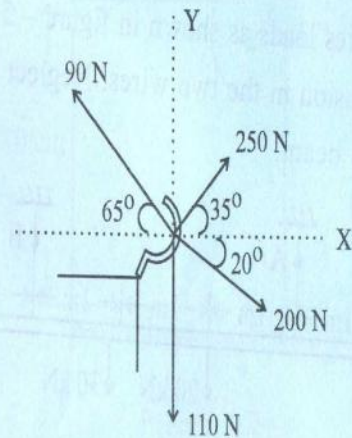


Figure - 3

(OR)

Turn Over

12. Determine the magnitude of the force F and the angle θ for the particle - A shown in figure - 4 to be in equilibrium.

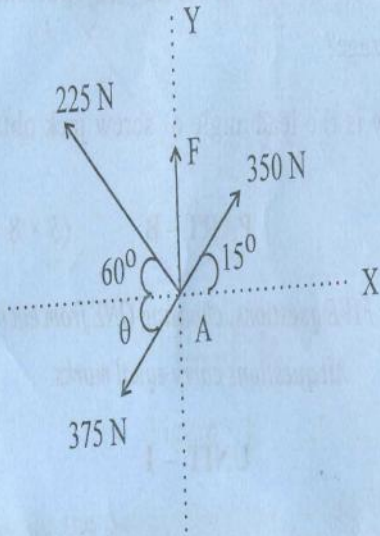


Figure - 4

13. A beam hanging from two vertical wires A and B carries loads as shown in figure - 5. Calculate the tension in the two wires. Neglect the weight of the beam.

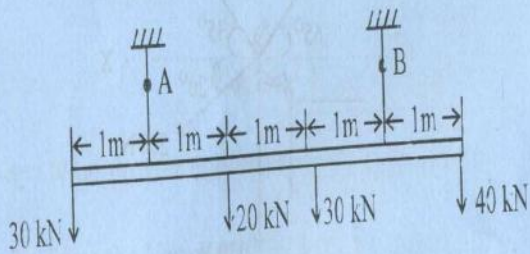


Figure - 5

14. Determine the horizontal and vertical components for the beam loaded as shown in figure - 6.

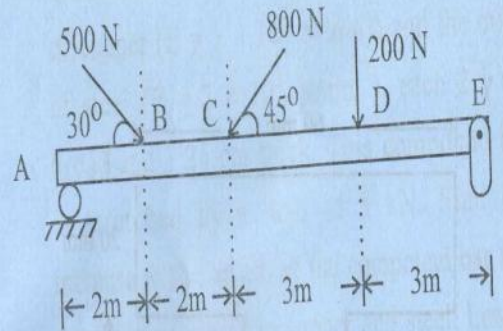


Figure - 6

UNIT - III

15. Find the centroid of the area shown in figure - 7.

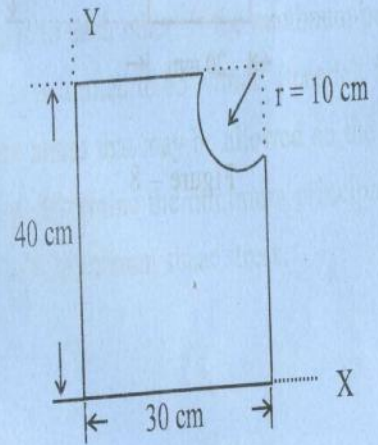


Figure - 7

(OR)

Turn Over

16. Determine the moments of inertia about the centroidal axes for the T-section shown in figure - 8.

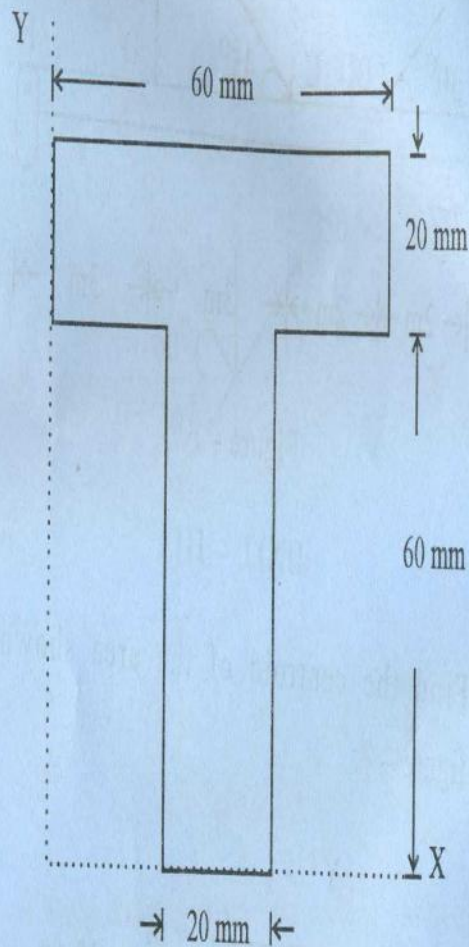


Figure - 8

UNIT - IV

17. A bar 300 cm long is made of two bars, one of copper ($E = 1 \times 10^5 \text{ N/mm}^2$) and the other of steel ($E = 2 \times 10^5 \text{ N/mm}^2$), each 2.5 cm broad and 1.25 cm thick. This compound bar is stretched by a load of 5 kN. Find the increase in the length of the compound bar and the stress produced in copper and steel. Length of copper as well as of steel bar is 300 cm.

(OR)

18. At a point in an elastic material, a direct tensile stress of 50 N/mm^2 and a direct compressive stress of 30 N/mm^2 are applied on planes right angles to each other. If the maximum principal stress is limited to 65 N/mm^2 (tensile), find the shear stress that may be allowed on the planes. Also, determine the minimum principal stress and the maximum shear stress.

UNIT – V

19. Determine the force P required to hold a mass of 10 kg in equilibrium utilizing the system of pulleys shown in figure-9. Assume that all pulleys are the same size.

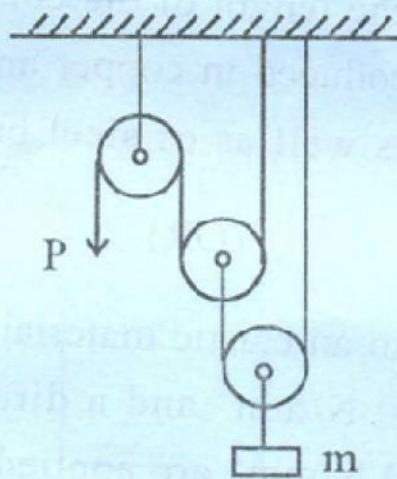


Figure – 9

(OR)

20. The mean diameter of the threads of a square-threaded screw is 50 mm. The pitch of the thread is 6 mm. What force must be applied at the end of a 600 mm lever which is perpendicular to the longitudinal axis of the screw to raise a load of 15 kN?

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B.E. DEGREE EXAMINATION, 2011

(COMMON TO ALL BRANCHES)

(FIRST SEMESTER)

S-103.PHYSICS-I

May)

(Time: 3 Hours

Maximum: 60 Marks

*Answer any ONE FULL question from each unit
All questions carry equal marks*

UNIT-I

1. a) Distinguish between spontaneous and stimulated emission of radiation. (4)
b) Describe the construction and action of CO₂ laser. (8)
2. a) What are the conditions required for laser action. (4)
b) Describe the principle involved in construction of hologram and reconstruction of image from it. (8)

UNIT-II

3. a) What are step index and graded index fiber? (4)
b) Draw a block diagram of fiber communication and briefly explain each part in it. (8)

4. a) Write a theory of photoelastic bench. (4)
 b) Explain different parts and their functions of photo elastic bench. (8)

UNIT-III

5. a) Lattice constant of copper is 0.38 nm . Calculate the distance between (110) planes. (4)
 b) Derive packing factor of HCP structure. (8)
6. a) What is the expression for density of crystal in terms of lattice constant? (4)
 b) What are the different types of crystal imperfections? Explain any two imperfections. (8)

UNIT-IV

7. a) What are the acceptor and donor levels. (4)
 b) Discuss with necessary theory of variation of terms level with temperature in n-type semi-conductor. (8)
8. a) Write short notes on :
 i) Critical magnetic field. (2)
 ii) Critical temperature. (2)
 iii) Meissner effect. (2)
- b) Write six important applications of superconductors. (6)

UNIT-V

9. a) What are free and bound electrons? (4)
 b) Obtain expression for thermal conductivity. Deduce Weidman-Franz law. (8)
10. a) Explain ionic and electronic polarization. (4)
 b) Write the properties of good dielectric material. (8)

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8520

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B.E. DEGREE EXAMINATION, 2011

(COMMON TO ALL BRANCHES)

(SECOND SEMESTER)

S-202-PHYSICS-II

May)

(Time: 3 Hours

Maximum: 60 Marks

*Answer any ONE FULL question from each unit
All questions carry equal marks*

UNIT-I

1. a) What is acoustics of a building? (2)
b) Explain the principles to be observed in the acoustical design of an auditorium. (10)
2. Describe piezoelectric method of production of ultrasonic waves. What are uses of ultrasonic waves? (10+2)

UNIT-II

3. a) How are X-rays produced? What are the uses of X-rays? (3+3)
b) Derive Bragg's law of X-ray diffraction. (6)

4. Describe how crystal structure is determined using Bragg's spectrometer. (12)

UNIT-III

5. a) Explain De-Braglie's hypothesis of matter waves. (4)
b) Describe an experiment to confirm De-Braglie's concept of matter waves. (8)
6. a) Derive an expression for De-Braglie wavelength associated with electrons. (6)
b) What are the properties of matter waves? (6)

UNIT-IV

7. Using Schrödinger's time independent wave equation, discuss the motion of particle in on dimensional box and obtain eigen function and eigen values of the particle. (12)
8. With a neat diagram, describe the working of G.M counter. What is the use of such counter? (8+4)

UNIT-V

9. a) Explain nuclear fission and nuclear fusion with example. (4+4)
b) Explain nuclear chain reaction. (4)
10. a) What are the types of nuclear reactors? (4)
b) Describe controlled thermo nuclear reactor. (8)

8 5 2 3

B.E. DEGREE EXAMINATION, 2011

(SECOND SEMESTER)

S-205 / BPHC-204.

ENVIRONMENTAL STUDIES

(Common to ALL Branches)

(Common with B.Pharm Second Semester)

May]

[Time : 3 Hours

Maximum : 60 Marks

Answer any ONE FULL question from each unit.

All questions carry equal marks.

UNIT - I

Explain briefly with examples about types of renewable and non-renewable resources.

(OR)

Name any five institutions working on pollution control. Also, list the various steps in environmental monitoring.

Turn Over

UNIT - II

3. What is an ecosystem ? Describe the structure and function of various components of an ecosystem.

(OR)

4. Explain with neat sketches the types of ecological pyramids.

UNIT - III

5. Explain the value of bio-diversity related to consumptive use and productive use.

(OR)

6. Discuss in detail about *in-situ* and *ex-situ* conservation of bio-diversity.

UNIT - IV

7. Write explanatory notes on :

- (a) Biological magnification.
- (b) Synergism.
- (c) Anthropogenic sources of pollution.
- (d) Plants controlling pollution.

(OR)

8. What are the natural and man-made pollutants that cause air pollution ?

UNIT - V

9. What is meant by water harvesting ? What are the purposes served by it ?

(OR)

10. Explain the terms in detail :

- (a) Global warming.
- (b) Acid rain.
- (c) Ozone layer depletion.

2. Briefly discuss the various optical properties of minerals. How will their determination help in identifying minerals?

UNIT - II

3. What are igneous rock and how are they formed? Enumerate the important igneous rocks and briefly discuss their identification in the field.

(OR)

4. What are the classification of sedimentary rocks? Explain them briefly.

UNIT - III

5. Write short notes on the following :

- (a) Dip.
- (b) Inlier.
- (c) Joints.
- (d) Dip of bed.

(OR)

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B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(FIRST SEMESTER)

CLEC - 304 / PCLEC - 104.

ENGINEERING GEOLOGY

(*New Regulations*)

(*For the students joined during 2007-08 and after*)

May]

[Time : 3 Hours

Maximum : 60 Marks

Answer any ONE full question from each unit.

All questions carry equal marks.

UNIT - I

1. What are the physical properties of minerals? Explain them briefly.

(OR)

Turn Over

2. Briefly discuss the various optical properties of minerals. How will their determination help in identifying minerals?

UNIT - II

3. What are igneous rock and how are they formed? Enumerate the important igneous rocks and briefly discuss their identification in the field.

(OR)

4. What are the classification of sedimentary rocks? Explain them briefly.

UNIT - III

5. Write short notes on the following:

- (a) Dip.
- (b) Inlier.
- (c) Joints.
- (d) Dip of bed.

(OR)

6. Classify and describe with neat sketches the different types of folds in rocks. Explain how they are recognized in field.

UNIT - IV

7. What is meant by stability of slopes and slides? How landslide is prevented?

(OR)

8. What is meant by 'intensity' and 'magnitude' of an earthquake? What considerations and safety measures are required while designing engineering structures particularly buildings and dams in a seismic region?

UNIT - V

9. What are the geological factors which govern the over-break in the case of tunnels?

(OR)

10. Give a brief critical account of geological knowledge as applied in the construction of dams and tunnels.

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B.E. DEGREE EXAMINATION, 2011

(FIRST YEAR)

(EIGHTH SEMESTER)

106. BASIC ENGINEERING

(*New Pattern*)

(*New Regulations*)

(*For the students joined during 2008-09
and after*)

May]

[Time : 3 Hours

Maximum : 60 Marks

*Answer Part - A, Part - B and Part - C
in separate answer books.*

All questions carry equal marks.

Turn Over

2
PART - A (20)

(CIVIL ENGINEERING)

SECTION - I (3×2=6)

Answer ALL questions.

1. What are the raw materials used for the manufacture of cement? (2)
2. What is rubble masonry? (2)
3. What is meant by disinfection? (2)

SECTION -II (2×7=14)

Answer any TWO FULL questions.

4. (a) What are the four distinct operations of brick manufacture? (4)
(b) Mention any four special types of bricks. (3)
5. (a) List the different types of roofs. (4)
(b) Distinguish between clear span and effective span. (3)
6. (a) State the few important factors governing the selection of site for a dam. (4)

3

- (b) List the dams according to the classification of use. (3)

PART - B (20)

(MECHANICAL ENGINEERING)

SECTION - I (3×2=6)

Answer ALL questions.

1. Differentiate between water tube and fire tube boilers.
2. Write the advantages of diesel engine.
3. Write any four types of transmission systems available.

SECTION -II (2×7=14)

Answer any TWO questions.

4. Explain the working principle of Cochran boiler with neat sketch. (7)
5. (a) Explain the types of flames in the gas welding. (5)
(b) Write the advantages and disadvantages of gas welding. (2)

Turn Over

6. Explain the concept of power transmission through belt drives with neat sketch. (7)

PART - C (20)

(ELECTRICAL ENGINEERING)

SECTION - I (3 × 2 = 6)

Answer ALL questions.

All questions carry equal marks.

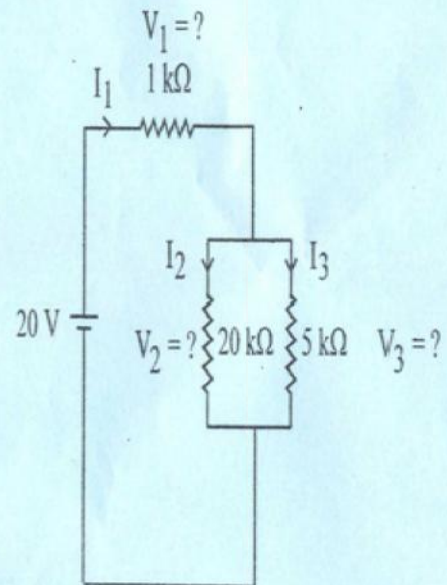
1. What is the equivalent resistance value when two resistors are connected in series?
2. Distinguish between moving coil and moving iron instruments.
3. What are called as universal gates and why they are called so?

SECTION - II (2 × 7 = 14)

Answer any TWO questions.

All questions carry equal marks.

4. Find the voltages V_1 , V_2 and V_3 for the given circuit.



5. Explain the working principle of dynamometer type wattmeter.
6. Explain the concept of frequency modulation with neat diagram.

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B.E. DEGREE EXAMINATION, 2011

(ANNUAL PATTERN)

(FIRST YEAR)

104. ENGINEERING CHEMISTRY

(Old Pattern)

(For the students joined during 2007-08 only)

May]

[Time : 3 Hours

Maximum : 60 Marks

Answer any one full Question from each unit

UNIT-I

1. a) Discuss the water softening by ion exchange process.
b) Write a note on acid rain and ozone depletion.
2. a) Discuss the estimation of hardness of water by EDTA method.
b) What is green house effect? Discuss the sources and effects of green house effect.

UNIT-II

3. a) Explain the preparation and uses of Bakelite and silicon resin.

- b) Explain the Langmuir's theory of adsorption.
4. a) Discuss the types of polymerization with example.
- b) Explain the adsorbents and adsorbates with example.

UNIT-III

5. a) Explain the flue gas analysis with neat diagram.
- b) Write note on synthetic petrol and calorific value.
6. a) Write a note on refining of petroleum.
- b) Explain the working principles of photovoltaic cell.

UNIT-IV

7. a) Explain the mechanism of wet corrosion.
- b) Discuss the anodizing and phosphating processes.
8. a) Write note on nickel cadmium cell and fuel cell.
- b) Distinguish between galvanizing and tinning process.

UNIT-V

9. a) Discuss the factors influencing adhesive action.
- b) Write note on fullerenes and nano sheets.
10. a) Explain the classification and applications of refractories.
- b) Discuss the preparation of nano materials.
-

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B.E. DEGREE EXAMINATION, 2011

(FIRST YEAR)

101. TECHNICAL ENGLISH

(*New Pattern*)

(*New Regulations*)

(*For the students joined during 2008-09
and after*)

May]

[Time : 3 Hours

Maximum : 60 Marks

SECTION - A (10×2 =20)

Answer ALL questions.

All questions carry equal marks.

1. Define 'team listening.'
2. What is 'active listening'?

Turn Over

3. What is 'stress'?
4. What are human resources?
5. Write the phonetic transcription of the following :
 - (a) Sugar.
 - (b) Unit.
 - (c) Rice.
 - (d) Gold.
6. What is 'note making'?
7. Mention the main parts of an 'essay.'
8. Define 'e-mail.'
9. What is 'concord'?
10. Bring out the meaning of 'antonym.'

SECTION - B (5 × 8=40)

Answer ALL of the following questions.

All questions carry equal marks.

11. (a) Explain four factors that are essential on improving fluency and oral expression.

(OR)

- (b) Make nouns from the following verbs :

- (i) collect.
- (ii) convey.
- (iii) civilise.
- (iv) creat.
- (v) divert.
- (vi) erode.
- (vii) equip.
- (viii) apply.

12. (a) Enumerate the essential features of note making.

(OR)

- (b) Mark the stress in the following words :

- (i) Conduct.
- (ii) Contract.
- (iii) Desert.
- (iv) Poignant

Turn Over

(v) Subject.

(vi) Produce.

(vii) Rebel.

(viii) Refuse.

13. (a) Use hints given below to write a short paragraph of about 100 words :

History of science - the story of Galileo and his clash with the Roman Catholic church- Ptolemy's theory of earth as centre of universe- not acceptable to Galileo - he stressed experiment and observation - promoted Copernicus' theory of sun as centre of universe - consequence - attack from academicians- trail for heresy.

(OR)

- (b) Explain the principles of paragraph writing.

14. (a) Attempt an essay on the following topic :

“Information technology - where are we going ?”

(OR)

- (b) Write a letter to a Youth Hostel seeking accommodation for the students.

15. (a) Rewrite as directed :

(i) Father was too old to carry the luggage. *(Use so that ... not.)*

(ii) I am regular to the college

(Add a question tag.)

(iii) John stole the jewels.

(Change into a passive sentence.)

(iv) For example, we cannot receive X-ray the stars.

(Fill in the blanks with suitable preposition.)

(OR)

Turn Over

(b) Select the appropriate grammatical structure for each blank :

(A) The Egyptians knew the art of jewellery making

- (i) As early as 3,000 B.C.
- (ii) As late as 3,000 B.C.
- (iii) As quickly as 3,000 B.C.
- (d) As old as 3,000 B.C.

(B) One of India's priorities is ...

- (i) Help grow more food.
- (ii) To grow more food.
- (ii) For grow more food.
- (iv) More food.

(C) Sita is very intelligent ?

- (i) Is she ?
- (ii) Wasn't she ?
- (iii) Was she ?
- (iv) Isn't she ?

(D) Use the following in sentences of your own :

- (i) Rush hour.
- (ii) To shake off.
- (iii) Waste of time.
- (iv) To bring up.