

II B. Tech I Semester Supplementary Examinations, May - 2018**PYTHON PROGRAMMING**

(Com to CSE & IT)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**

PART -A

1. a) What happens if a semicolon (;) is placed at the end of a Python statement? (2M)
- b) What are membership operators? Give examples for usage. (3M)
- c) What is a dictionary in Python? (2M)
- d) Can a Python function return multiple values? If yes, how it works? (2M)
- e) How to make a Python class member variable hidden from outside the class? (2M)
- f) Write Python program to calculate your age in days. (days between Today and Date of Birth) (3M)

PART -B

2. a) What are different applications of Python? Give examples. (6M)
- b) Write a Python program to convert height in feet and inches to cm. (8M)
 [1 feet = 12 inch and 1 inch= 2.54 cm]
 (Sample input: 2 feet 7 inch Sample output: 78.74 cm)
3. a) List and explain different arithmetic operators supported by Python. Discuss about their precedence and associativity. (7M)
- b) Write a Python program to print all prime numbers less than 256. (7M)
4. a) Write a Python program that interchanges the first and last characters of a given string. (6M)
- b) Give a comparison between lists, tuples, dictionaries and sets. (8M)
5. a) What type of parameter passing is used in Python? Justify your answer with sample programs. (7M)
- b) Write a Python function that prints all factors of a given number. (7M)
6. a) Write a Python program that overloads + operator, to add two objects of a class. (7M)
- b) How to create, raise and handle user defined exceptions in Python. (7M)
7. a) What are regular expressions? How to find whether an email id entered by user is valid or not using Python 're' module. (4M)
- b) Write a Python program that creates a GUI with a textbox, Ok button and Quit button. On clicking Ok, the text entered in textbox is to be printed in Python shell; on clicking Quit, the program should terminate. (10M)

II B. Tech I Semester Supplementary Examinations, May - 2018
BUILDING MATERIALS AND CONSTRUCTION
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

1. a) What is meant by quarrying state the methods of quarrying?
- b) Distinguish random rubble masonry and coursed rubble masonry
- c) Differentiate between Portland Cement and white cement.
- d) Enumerate various types of cement.
- e) What are the objectives of using paint?
- f) What is meant by voids in fine aggregate? How is it measured?

**PART -B**

2. a) State the general properties and importance of glass.
- b) State the characteristics of Roof tiles: Explain briefly the Mangalore tiles and Alahabad tiles.
3. a) Explain brief about alternative materials for wood.
- b) What is seasoning of timber? State the objects of seasoning.
4. a) Compare and contrast advantages and disadvantages of using lime and cement in construction works.
- b) Describe in brief any type of manufacture of cement with the help of flow diagram?
5. a) What are the various types of arches, Explain any one.
- b) Describe in brief the construction of R.C.C floor.
6. a) What are the requirements of good 'Form work'?
- b) Differentiate between paints and distemper.
7. a) Explain in brief about adsorption and moisture content of aggregate.
- b) State the important characteristics of good sand in construction works and also state its functions.



**II B. Tech I Semester Supplementary Examinations, May - 2018**  
**ELECTRICAL MACHIENS-I**  
 (Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **THREE** Questions from **Part-B**

**PART -A**

- 1 a) Write the principle of electromechanical energy conversion. 3M  
 b) Explain how commutation is improved by use of interlopes. 3M  
 c) Briefly discuss different Methods of excitation of DC machines. 4M  
 d) Write significance of back emf in DC motors. 4M  
 e) Explain break test on shunt motor. 4M  
 f) Discuss on choice of electrical and magnetic loadings while design of DC Machine. 4M

**PART -B**

- 2 a) Briefly explain the various phenomena useful for electromechanical energy conversion in rotating machines. 8M  
 b) Briefly explain construction features of DC Generator and write functions of each part in it with suitable diagram. 8M
- 3 a) Briefly discuss on detrimental effects of armature reaction. 8M  
 b) A 4-pole DC shunt generator supply a current of 143 A. It has 492 conductors armature lap connected while delivering full load: the brushes are given an lead of  $10^\circ$ . Calculate the magnetizing ampere turns per pole. The filed winding is shunt connected and takes 10 A. Find the number of extra shunt field turns necessary to neutralize the demagnetization. 8M
- 4 a) Determine the internal characteristics from external characteristics of a DC shunt generator. 8M  
 b) The open-circuit characteristics of a separately excited D.C. generator driven at 1000 r.p.m.is as follows: 8M

|               |      |      |      |      |       |       |       |       |
|---------------|------|------|------|------|-------|-------|-------|-------|
| Field Current | 0.2  | 0.4  | 0.6  | 0.8  | 1.0   | 1.2   | 1.4   | 1.6   |
| E.M.F.volts   | 30.0 | 55.0 | 75.0 | 90.0 | 100.0 | 110.0 | 115.0 | 120.0 |

If the machine is connected as a shunt generator and driven at 1000 r.p.m. and has a field resistance of 100 ohm, find i) open circuit voltage and exciting current ii) the critical resistance and iii) resistance to induce 115 volts on open circuit.



- 5 a) Explain different types of characteristics of DC shunt, series and compound motors. 8M
- b) A 4-pole, 250 V, d.c shunt motor takes 2 A on no-load, when running at 1200 rpm. The armature and field resistances are  $0.15 \Omega$  and  $150 \Omega$  respectively. The brush drop is 2 V. If the motor takes total current of 60 A at full-load, calculate its full-load speed. Assume that the flux gets weakened by 5% under full-load condition due to armature reaction. 8M
- 6 a) Explain Speed control of DC motors by armature voltage and field flux control. 8M
- b) Explain methods of electrical breaking on DC motors. 8M
- 7 Calculate the armature diameter and core length for a 8 kW, 4pole, 1000rpm, and 220V shunt motor. 16M  
Assume: Full load efficiency = 0.83, field current is 2.5% of rated current. The maximum efficiency occurs at full load.



**II B. Tech I Semester Supplementary Examinations, May - 2018**  
**ENVIRONMENTAL STUDIES**  
(Com. to ECE, EIE, ECC)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answer **ALL** the question in **Part-A**  
3. Answer any **THREE** Questions from **Part-B**

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PART -A

1. a) Write about Desert ecosystem?
- b) Write a note on dams and other effects on forest?
- c) Write about species and ecosystem?
- d) Write a note on Nuclear hazards?
- e) Write a short note on Environmental ethics?
- f) Explain the preparation of EMP and EIS?

PART -B

2. a) Write a note on the importance of education on environmental issues and concerns
- b) Describe the multidisciplinary nature of environmental studies
3. a) Explain the Role of an individual in conservation of natural resources?
- b) Explain the Equitable use of resources for sustainable lifestyles?
4. a) Write briefly about the different types of diversity in ecosystems.
- b) Explain what value of biodiversity is and what are the different types of values of biodiversity?
5. What are the global effects of air pollution? Discuss briefly the sources, effects and control methods?
6. Discuss briefly the provision of the following Acts:
 - a) The Water (Prevention Control of Pollution) Act ,1974
 - b) The Air (Prevention and Control of Pollution) Act, 1981
7. Explain the Case study and preparation of Environmental Impact assessment



II B. Tech I Semester Supplementary Examinations, May - 2018
SURVEYING
 (Agricultural Engineering)

Time: 3 hours

Max. Marks: 70

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **THREE** Questions from **Part-B**
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PART -A

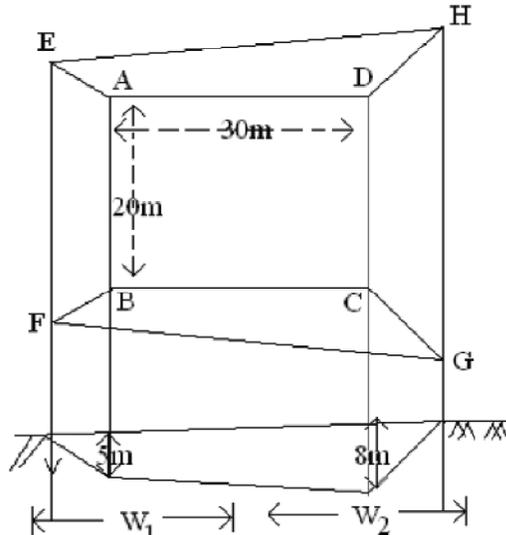
1. a) Explain the terms: Check Line, Base Line, Tie Line, and oblique offset.
- b) Name the different types of levels. Describe the Dumpy level.
- c) How do you determine the earth work for a borrow pit?
- d) In a traverse survey, the angular measurements were made with an error of 20". What is the relative accuracy in the linear measurements?
- e) What is the advantage of internal-focusing telescope in a tacheometer.
- f) Differentiate Thematic Map and Topographical Map.

PART -B

2. a) Explain bearing. What are different systems of designation of bearings? Explain.
- b) A Chain was tested before starting a survey and was found to be exactly 30m. At the end of the Survey, it was tested again and found to measure 30.10m. The area of the plan of the field drawn to a scale of 1cm = 20m was 160 square centimeters. Find the true area of the field in square metres.
3. a) What is the difference between the "temporary" and "permanent adjustments" of a level?
- b) During a construction work, the bottom of a sunshade A was taken as a temporary B.M having R.L=63.120m. The following readings were taken:
 Inverted staff reading on B. Mat A = 2.232 m
 Reading on peg P on ground = 1.034m
 change of instrument [Reading on peg P on ground = 1.328]
 Inverted staff reading on the bottom of cornice B=4.124m
 Enter the readings in a level book page and calculate the R.L of cornice B



4. Calculate the volume of excavation shown in Figure, the side slope being $1\frac{1}{2}$ horizontal to 1 vertical, and the original ground surface sloping at 1 in 10 in the direction of the center line of excavation. $AB = CD = 20\text{m}$ and $BC = AD = 30\text{m}$. Figure:1



5. a) Draw a neat sketch of a transit theodolite and explain the functions of its various components.
 b) In order to ascertain the elevation of the top (Q) of the signal on a hill, observations were made from two instrument stations P and R at horizontal distance 120 meters apart, the station P and R being in the line with Q. The angles of elevation of Q at P and R were $28^{\circ} 42'$ and $18^{\circ} 6'$ respectively. The staff readings upon the benchmark of elevation 287.28 were respectively 2.70 and 3.750 when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of the signal if the height of the signal above its base is 3 meters.
6. a) Write the advantages and disadvantages of keeping the staff vertical and also about tacheometer survey over other methods
 b) To determine the distance between two points P and Q, and the R.L. of Q, the following observations were made:
 Height of tacheometer at P = 1.480 m
 Vertical angle at P = $+5^{\circ} 20'$
 Staff readings (with staff vertical) = 0.545, 0.905, 1.265
 R.L. of P = 150.000 m
 $k = 100.00$ $c = 0.0$
7. a) What is Geodetic Surveying? How it is different from Plane surveying.
 b) Explain the importance of total station surveying in the field of surveying.



II B. Tech I Semester Supplementary Examinations, May - 2018
ELECTRONIC DEVICES AND CIRCUITS
 (Com. to EEE, ECE, EIE, ECC, CSE, IT, BME)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions
 All Questions carry **Equal** Marks
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1. a) With the help of a block schematic explain the working of a CRO. What are the applications of CRO?  
 b) Two parallel plates of a capacitor are separated by 4cms. An electron is at rest initially at the bottom plate. Voltage is applied between the plates, which increases linearly from 0V to 8V in 0.1 msec .If the top plate is +ve, determine  
 i) The speed of electron in 40 n sec    ii) The distance traversed by the electron in 40 n sec
2. a) Draw and explain the energy band diagrams of an insulator, semiconductor and conductor.  
 b) Determine the length of a copper wire of 2mm diameter having a resistance of 2 K $\Omega$  and conductivity of  $5.8 \times 10^7$ S/m. When a electric field 20 mV/m is applied, find the current density.
3. a) What is a tunnel diode? Draw the V-I characteristics of a tunnel diode.  
 b) Explain the formation of depletion region in an open-circuited pn-junction with neat sketches.
4. a) Draw a sketch of a half-wave rectifier. Derive the expression for (i) DC current, ii) rms load current when the diode is not ideal.  
 b) Define ripple factor.  
 c) What are the advantages of a full-wave bridge rectifier as compared to a full-wave centre-tapped rectifier?
5. a) Draw and explain the input and output characteristics of BJT in common-collector configuration.  
 b) The reverse saturation current of a transistor in common-base configuration is  $0.35\mu\text{A}$  and the dc current gain  $\alpha$  is 0.98. Calculate the collector current and emitter current of transistor. Assume the base current  $I_B = 15 \text{ mA}$ .
6. a) Explain the working of enhancement-mode type MOSFET and draw its characteristics  
 b) Explain the advantages of FET over BJT.
7. a) Explain how to obtain quiescent point graphically for a given transistor amplifier of CE configuration  
 b) Explain how sensistor is used for bias compensation.
8. a) Draw the small signal hybrid model of CB amplifier and derive the expressions for its  $A_i$ ,  $A_v$ ,  $R_i$  and  $R_o$ .  
 b) In common emitter configuration, a transistor has the following parameters  $h_{ie}=2.4 \text{ K}\Omega$ ,  $h_{re}=1.5 \times 10^{-4}$ ,  $h_{fe}=55$ ,  $h_{oe}=50 \times 10^{-6} \mu \text{ siemens}$ ,  $R_s= 1\text{K}\Omega$  and  $R_L=2\text{K}\Omega$ . Determine the current gain.

