

FEDERAL PUBLIC SERVICE COMMISSION  
COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS  
IN BPS-17 UNDER THE FEDERAL GOVERNMENT, 2001.

**FORESTRY**

TIME ALLOWED: THREE HOURS MAXIMUM MARKS: 100

NOTE: Attempt FIVE questions in all, including Question No.8 which is Compulsory. All questions carry equal marks. Avoid writing irrelevant material for the sake of bulk. Organize your write – up.

1. Discuss problems of coniferous Forests of Pakistan. Also give suggestions for sustainable management of these forests.
2. Describe the role of Northern Mountain Watershed region in alleviating the present water crises in the country.
3. What do you know about Forest Mensuration? Describe various methods for calculating true volume of standing tree.
4. Write short essays on the following:
  - (a) Thinnings
  - (b) Game sanctuary
  - (c) Mangrove Forests of Pakistan and marine fauna.
  - (d) Agro grazing
5. Explain single stem silvicultural system. Give suggestions for effective silvicultural management of Juniper forests.
6. What do you mean by scientific/commercial Range Management? Why has it not taken roots in Pakistan so far?
7. Discuss briefly how Forestry can be integrated with other agricultural and non-agricultural land uses in the country.

**COMPULSORY QUESTION**

8. Write only the correct answer in the Answer Book. Don't reproduce the questions.
  - (A) Fill in the blanks:
    - (1) Tree age can be estimated by counting \_\_\_\_\_
    - (2) Wood is largely made of cellulose and \_\_\_\_\_

- (3) \_\_\_\_\_ is made of thin veneers pasted over each other across the grains.
- (4) Most important hurdle in popularizing Eucalyptus is absence of reliable and attractive \_\_\_\_\_ for its logs.
- (5) The only possible and practical break through in timber production in present day Pakistan appears to be \_\_\_\_\_.
- (6) We can highly increase browse production in Pothowar region by promoting the growth of one indigenous species such as \_\_\_\_\_.
- (7) In our salt affected former farm lands of Punjab and Sindh, we can easily plant following indigenous tree species \_\_\_\_\_.
- (8) Zigyphus species are undoubtedly over best \_\_\_\_\_ shrubs.
- (9) \_\_\_\_\_ is our best furniture wood.
- (10) Dominant tree species of Ziarat coniferous Forest is \_\_\_\_\_.

(B) Write only True or False in the answer book. Do not reproduce the questions.

- (11) Basal area means cross section area of a tree bole at the height of 4' - 6" above ground.
- (12) Tree volume of a bole is estimated by multiplying bole height in ft with basal area in ft<sup>2</sup>.
- (13) Abney's level is an instrument used for measuring slopes.
- (14) Carrying capacity of scrub forest range means volume of fire wood produced per hectare.
- (15) Five sheep eat as much forage as 3 goats do.
- (16) Contour line means line of maximum slope on the ground surface.
- (17) Watershed line means a line on ground which divides falling rain water into two opposing directions.
- (18) Endangered species are those which are heading towards possible extinction.
- (19) A thick high timber forest is an ideal habitat for goats, deer, cattle leopards and lions.
- (20) A rill refers to a micro stream which can be easily obliterated by ploughing.

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS  
IN PBS-17, UNDER THE FEDERAL GOVERNMENT, 2002

FORESTRY

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

**NOTE:** Attempt **FIVE** questions in all, including **QUESTION NO. 8** which is **COMPULSORY**. All questions carry **EQUAL** marks. Avoid writing irrelevant material for the sake of bulk. Organize your write-up.

1. Suggest suitable strategic measures separately for (a) improving productivity, (b) enhancing economic viability cum profitability and (c) ensuring a secure future for man-made irrigated forests plantations of Pakistan.
2. (a) How can you prolong effective life of Mangla Lake? Discuss if raising of dam height is an appropriate lasting solution of the problem.  
(b) Why raising of Range Livestock has not taken roots as an industry (as opposed to Poultry Industry) in Pothowar Tract which is considered a high potential range area?
3. Give a brief of the major recommendations of Forest Sector Master Plan of 1993. Will it lead Pakistan to a timber cum fuel surplus status by the year 2018? If not why?
4. (a) Briefly describe general characteristic features of various ecological factors influencing forest tree growth.  
(b) What silvicultural measures do you propose for rejuvenating and extending Dry Temperate Forests of Balochistan?
5. How will you attract capital and intellect from private sector for conserving natural habitats for the promotion of wildlife in various regions of the country? In case you succeed in your efforts, in what specific ways will you like this newly generated capital and intellect to serve the cause of wildlife promotion in the country.
6. How will you estimate age, height, diameter at breast height and true volume of a forest tree bole? What is meant by CAI and how will you estimate it for a single tree?
7. Write brief notes on any **FIVE** of the following:

(a) Succession	(b) Completely Randomised Design
(c) Quality Class	(d) Kas training
(e) Savannah	(f) Causeway
(g) Fire line	(h) Niche.

COMPULSORY QUESTION

8. Give only appropriate response in the answer book. Do not reproduce the question.

FORESTRY

(A) Fill in the blanks with suitable word(s).

- (1) Smallest permanent land unit in forest management is called .....
- (2) A permanent and stable community of plants and animals of all kinds in which woody vegetation dominates is called .....
- (3) Forests growing along seacoast and subject to daily sea water inundations are called .....
- (4) Science and art of establishing, tending and perpetuating a healthy tree crop is called .....
- (5) Number of animal units that can be grazed in one hectare of range area for one complete year is called ..... of that range area.
- (6) Deterioration and degradation of vegetation and soil of an area due to any outside agency such as over-grazing or fire etc. is called ....
- (7) A basin like area which is less deep than wide and collects surplus rain water that ultimately drains into a stream is called .....
- (8) Dislodging, removal and loss of soil particles from their original site by run off water is called .....
- (9) A line on the highest ground that separates two adjoining basins is called .....
- (10) Area of a habitat under effective control of a particular animal or a group of animals which is actively defended by them against any intrusion by other animals of the same species is called .....

(B) Write only TRUE or FALSE against each sub-question number.

- (11) Basal area of a forest is the sum total of cross sectional areas of all tree boles of that forest if these are cut at ground level.
- (12) Normal forest is one which comprises of healthy and vigorous trees of same age.
- (13) Arranging fire wood logs or sawn wood members in layers one above the other in the form of a standardized pile for easy measurement, seasoning and storage is called stacking.
- (14) Volume Table give heights, diameters at breast height and volumes etc for various age groups of trees.
- (15) An animal unit refers to a cow weighing about 450 Kg and eating about 9 Kg of air dry forage per day.
- (16) Unmanaged grazing by the livestock of unsettled migratory tribes is called Best Block Grazing System.
- (17) A cusec refers to one cubic foot of water flowing in one minute.
- (18) In sloping lands a 100% slope is equal to 45° slope.
- (19) Omnivores are the same as scavengers.
- (20) In wildlife biology, a litter refers to a layer of dead leaves, straw, twigs etc. lying on ground surface.

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COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS  
IN PBS-17, UNDER THE FEDERAL GOVERNMENT, 2003

FORESTRY

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE: Attempt FIVE questions in all, including QUESTION NO.8 which is COMPULSORY. All questions carry EQUAL marks. Write clearly.

1. Briefly describe the following:
 

(A) Uniform Shelterwood System.	(B) Normal Forest.
(C) Multiple use Trees.	(D) Mimicry.
2. Define the following terms:
 

(A) Cause way.	(B) Game Reserve.
(C) Random Sampling.	(D) Mensuration
(E) Behavioural Adaptations of Trees.	(F) Chain Survey.
(G) Radio Frequency – Vacuum Seasoning.	
(H) Laminated Wood Products.	
(I) Tethered Grazing.	(J) Forest Policy
3. What is meant by "Biological Diversity"? What are its various aspects? Why has it gained more importance recently? How will you promote and conserve it?
4. (A) How can Agro forestry invigorate our ailing Farming Systems?  
(B) How can Forestry come to the rescue of our degraded environment?
5. (A) Compare natural and artificial regeneration of forests. Indicate latest developments and trends.  
(B) What is meant by Forest Thinning? What is its silvicultural and economic importance.
6. (A) What are the prospects of enhancing recharge of under ground water reserves in various valleys of Balochistan? What line of action will you propose?  
(B) How should Government of Pakistan proceed to establish and promote Commercial Ranching in high potential sub-humid regions of the country?
7. Write notes on the following:
 

(A) Fundamentals of Wildlife and National Park Management.
(B) Major hazards to Pakistan's forests.
(C) Management Tables for Farm Grown Trees.
(D) Compare roles of PFI and of Agricultural Universities in popularizing forestry education and forestry consciousness in the country.

COMPULSORY QUESTION

8. Write only the correct answer in the Answer Book. Do not reproduce the question.
  - (1) A forest land is one which is:
    - (a) Already supporting forest
    - (b) Notified by Govt. for growing trees.
    - (c) Class V, VI land
    - (d) Class VII land
    - (e) (a), (b) and (c)
    - (f) None of these.

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- (2) Farm trees in Pakistan cover an area roughly equivalent to ---- of the area of the country:
- (a) 0.1% (b) 0.5%  
(c) 2.0% (d) 2.5%  
(e) 5.0% (f) None of these.
- (3) Pakistan cannot achieve desired 25% of its area under forest because:
- (a) We don't have necessary commitment, will power and sincerity.  
(b) We don't have enough funds and irrigation water.  
(c) We don't have suitable sites.  
(d) We don't have target-oriented forest policy.  
(e) (b), (c) and (d).  
(f) None of these.
- (4) Out of total range area of Pakistan, how much is of moderate to high potential?
- (a) Two - Third. (b) Half  
(c) One - Third. (d) One - tenth.  
(e) Insignificant. (f) None of these.
- (5) Is it ecologically feasible and sound to graze live stock in a forest?
- (a) No, never.  
(b) No, not in general but only occasionally and lightly.  
(c) Yes, always, everywhere in the forest, as much as desired.  
(d) Yes, everywhere in the forest but within its capacity.  
(e) Yes, but by excluding regeneration area and within the capacity of the forest.
- (6) Pakistan's grazing area is:
- (a) All season grass lands.  
(b) Seasonal grass lands.  
(c) Seasonal grass lands having few bushes and shrubs.  
(d) Seasonal having grass-like vegetation and a few tall trees.  
(e) Perennial bush plus shrub lands having seasonal grass cover.  
(f) None of these.
- (7) Radius of a tree bole is determined by:
- (a)  $\text{diameter} \div 3.142$  (b)  $(\text{girth} \div 3.142) \times 2$   
(c)  $(\text{girth} \times 3.142) \div 2$  (d)  $\text{diameter} \div 2$   
(e)  $\text{diameter} \times 3.142$  (f) None of these.
- (8) Which forest is most endangered in terms of having poor regeneration?
- (a) Fir forest (b) Deodar forest  
(c) Kao-Phulai forest (d) Juniper forest  
(e) Chilgoza forest. (f) None of these.
- (9) In mechanical thinnings, at the time of selecting trees:
- (a) quality of all trees is judged.  
(b) Quality of individual trees is not judged at all.  
(c) Quality of only those trees is judged which are to be removed.  
(d) Quality of only those trees is judged which are to be retained.  
(e) Only density of trees is considered.  
(f) None of these.
- (10) Pruning of branches:
- (a) Is must for all forest trees.  
(b) Is required for fuel trees to some extent.  
(c) Produces timber which is completely free from knots.  
(d) Slows down growth rate of trees significantly.  
(e) Is carried out for selected trees and it significantly reduces number and size of knots.  
(f) None of these.
- (11) With regards to management of range vegetation, which one of the following is most important in Pakistan:
- (a) Even grazing.  
(b) Appropriate grazing system.  
(c) Grazing according to carrying capacity.  
(d) Grazing season.  
(e) Grazing intensity.  
(f) None of these.

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- (12) Regarding range livestock management which operation is most important in Pakistan?  
 (a) Regular cutting, timely harvesting and efficient sale.  
 (b) Providing supplemental feed.  
 (c) Protection from parasites and predators.  
 (d) Providing shelter against extreme weather.  
 (e) Providing clean drinking water; cold in summer and warm in winter.  
 (f) None of these.
- (13) In Selection – wood Silvicultural System:  
 (a) Felling of mature trees is carried out at the end of rotation in regeneration block only; felling of immature trees is carried out in the rest of the blocks as and when required.  
 (b) Felling of mature as well as immature trees is carried out over the entire forest either every year or every alternate year.  
 (c) Felling of only mature trees is carried out in the entire forest after every 10 years.  
 (d) Basis of felling is the forest area rather than diameter size of the mature trees.  
 (e) Forest eventually gets developed into a two – storey high forest.  
 (f) None of these.
- (14) Which one of the following Silvicultural Operation is must in an irrigated coppice forest established for producing small logs for fuel, pulp, posts, props etc.?  
 (a) thinning (b) pruning (c) weeding  
 (d) irrigation (e) staking (f) None of these.
- (15) Sustained yield of a forest is possible when:  
 (a) annual cut is equal to annual increment  
 (b) annual cut is less than annual growth  
 (c) annual harvest is more than annual increment  
 (d) growing stock is normal  
 (e) Both (a) and (d). (f) None of these.
- (16) A tree bole grows in diameter at:  
 (a) Collar Zone (b) heart wood zone (c) pith  
 (d) layer of cells lying in between xylem and phloem (e) Crown  
 (f) None of these.
- (17) Forest yield can be increased on sustained basis by:  
 (a) Increasing annual cut (b) Increasing annual inputs  
 (c) Optimising tree crop density  
 (d) Ensuring that growing stock is healthy and normal.  
 (e) (b), (c) and (d). (f) None of these.
- (18) Survival of a new tree species in any locality can be predicted if the values of its required environmental parameters are:  
 (a) Just above minimum and just below maximum.  
 (b) At exact middle point between minimum and maximum.  
 (c) Optimum.  
 (d) Mid point between optimum and maximum.  
 (e) Mid point between minimum and optimum values of the locality.  
 (f) None of these.
- (19) If you come across a forest which comprises of one tree species, it strongly suggests that a severe:  
 (a) Climatic stress is there. (b) Human intervention is there.  
 (c) Edaphic constraints are there. (d) Biotic interference is there.  
 (e) Effect of any one of above or of any combination is there.  
 (f) None of these.
- (20) If you see a vast dense forest of mature trees without any regeneration, it indicates:  
 (a) Gross neglect by management over a long period.  
 (b) Serious climatic limitations. (c) Severe biotic problems.  
 (d) Severe edaphic problems.  
 (e) Any one of above problem or any combination thereof.  
 (f) None of these.

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# FEDERAL PUBLIC SERVICE COMMISSION

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## COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2004

### FORESTRY

TIME ALLOWED: THREE HOURS

MAXIMUM MARKS: 100

NOTE: Attempt FIVE questions in all, including Question No. 8 which is **COMPULSORY**. All questions carry **EQUAL** marks. Neat and clean writing with correct spellings of technical words will enhance chances of better marking.

1. Enlist four basic Principles of Range management. Describe in detail one of the principles, which you would prefer to apply to increase forage production in the Range land areas of Baluchistan.
2. Define Retrogression. In what way this parameter would guide a Range Land Manager to take timely action for improvement of the Range Land.
3. Length of a Felling Cycle is determined by Silvicultural and Economic parameters. Discuss each one with respect to Conifer forests.
4. Describe different approaches to identify quality of a Forest Site. Which one of the approaches is most practical and why?
5. Discuss in detail Interpretative Facilities that would enhance public enjoyment of Outdoor Recreation.
6. Differentiate between the followings:
  - (a) Forest Compartment and Forest Apartment
  - (b) Particle Board and Hard Board
  - (c) Floating PB and Fixed PB
  - (d) Working Plan and Working Circle
  - (e) Quarter Girth formula and Cylindrical formula
7. Write short notes on the following:
  - (a) Pneumatophores
  - (b) Point Sampling
  - (c) Hydrosere
  - (d) Discount rates
  - (e) Seigniorage

### COMPULSORY QUESTION

8. Write only the correct answer in the Answer Book. Do not reproduce the question.
  - (1) Marco Polo sheep was discovered by:
    - (a) WWF
    - (b) G. Mountfort
    - (c) T.J. Robert
    - (d) IUCN
    - (e) None of these
  - (2) Protected Forest is the one where in:
    - (a) No right is admitted
    - (b) One half rights are admitted
    - (c) One third rights are admitted
    - (d) All rights are admitted except those which are prohibited
    - (e) None of these
  - (3) Yield Table is the one which shows:
    - (a) Age classes, Number of trees, Diameter and Basal area
    - (b) Small wood volume, Large wood volume and A
    - (c) CAI, MAI and B
    - (d) A, B and C
    - (e) None of these
  - (4) Breast height is universally accepted to measure girth, diameter and Basal area at:
    - (a) 4 feet
    - (b) 3.5 feet
    - (c) 4.5 feet
    - (d) 5.5 feet
    - (e) None of these
  - (5) A Chir Forest being managed under Uniform system with 100 years rotation has a regeneration period of:
    - (a) 10 years
    - (b) 20 years
    - (c) 25 years
    - (d) 30 years
    - (e) None of these



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- (6) Timber is a wood other than firewood with over bark diameter at thin end as:  
(a) 6 inches (b) 8 inches (c) 10 inches  
(d) 12 inches (e) None of these
- (7) Stacked wood volume is a volume of wood stacked in a place measuring:  
(a) 30x4x4 feet (b) 40x5x5 feet (c) 50x8x8 feet  
(d) 20x5x5 feet (e) None of these
- (8) Small wood is a wood ranging between diameters of:  
(a) 2 to 4 inches (b) 2 to 6 inches (c) 2 to 8 inches  
(d) 3 to 9 inches (e) None of these
- (9) Punjab Forestry Research Institute is located in:  
(a) Bahawalpur (b) Lahore (c) Faisalabad  
(d) Rawalpindi (e) None of these
- (10) Eucalyptus is a highly suitable species for:  
(a) Sandy areas (b) Agriculture lands  
(c) Saline and Water logged areas (d) Cold desert  
(f) None of these
- (11) Hybrid Poplar is a highly desired species grown by the farmers of:  
(a) Sialkot in Punjab (b) Kashmir in Sindh  
(c) Charsada in NWFP (d) None of these
- (12) In the Forest Policy of 1955, one of the major recommendation to increase area under forests in new colonies was to reserve:  
(a) 5% of land and water (b) 10% of land and water  
(c) 15% of land and water (d) 3% of land and water  
(e) None of these
- (13) Office of the Inspector General of Forests is located in the Ministry of :  
(a) Food and Agriculture (b) Local Govt. and Rural Development  
(c) Environment (d) Commerce and Trade  
(e) None of these
- (14) Changa Manga Irrigated Plantation was established in;  
(a) 1825 (b) 1866 (c) 1877 (d) 1790 (e) None of these
- (15) Khirthar National Park is basically established to:  
(a) Explore oil and gas (b) Stabilize sand dunes  
(b) Protect Sindh Ibex (d) Quarry precious stones  
(e) None of these
- (16) Juniper Forests are also known as "Living Fossils" due to their extremely slow growth and longevity. These are specifically located in:  
(a) Northern Areas of Pakistan (b) Baluchistan  
(c) Coastal belts of Sindh (d) Rawala Kot in AJK  
(e) None of these
- (17) According to the Forestry Statistics of Pakistan, the country is facing wood shortage of:  
(a) 18 million cu m (b) 15 million cu m  
(b) 12 million cu m (d) 10 million cu m  
(c) None of these
- (18) Main species of Himalayan Moist Temperate Forests are:  
(a) Acacia modesta and Olea ferruginea  
(b) Pinus gerardiana and Pinus roxburghii  
(c) Pinus wallichiana and Abies pindrow  
(d) Pinus helepeis and Populus ciliata  
(e) None of these
- (19) Pakistan Journal of Forestry is published by:  
(a) Faisalabad Agriculture University  
(b) NWFP Agriculture University  
(c) Punjab Forestry School, Ghora Gali  
(d) Miani Forest Research Station, Hyderabad  
(e) None of these
- (20) Cotta's Formula is simple and famous among forestry students. Which one of the followings stand for this formula:  
(a)  $\text{Increment} = 4 \times \text{Volume} / R$  (b)  $\text{Rotation} = 4 \times \text{Volume} / \text{Increment}$   
(c)  $\text{Volume} = \text{Increment} \times R / 2$  (d)  $\text{Volume} = \text{Increment} \times R / 100$   
(e) None of these

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**FEDERAL PUBLIC SERVICE COMMISSION**

**COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS  
IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2005**

**FORESTRY**

**TIME ALLOWED: THREE HOURS**

**MAXIMUM MARKS: 100**

**NOTE:** Attempt FIVE questions in all, including QUESTION NO.8, which is **COMPULSORY**. All questions carry **EQUAL** marks. Neat and clean writing with correct spellings of technical names will enhance chances of better marking.

1. What are major environmental problems of Pakistan? How could knowledge of forestry help in combating these problems?
2. Proper management and use of resources in a given Range are based on four important fundamental criteria. Describe the same in detail with respect to Range areas in Cholistan desert.
3. What are different Temperature Zones of Pakistan? Relate different Forest types of Pakistan to these Temperature Zones. Give correct Binomial Nomenclature of major species representing each Forest Type in this respect.
4. Define Range Condition. Analyze Range Condition by drawing a relationship between Grazing Intensity and Percent Plant Composition by using your own hypothetical data.
5. Describe Selection Coppice System. Which Forest Type of Pakistan is being worked under this system and why?
6. (A) Define Forest Nursery. What is the need of raising a Forest Nursery?  
(B) Calculate Number of seeds required to be sown per square foot in a bed nursery to obtain 200 seedlings by using the following data:  
No. of seeds per pound = 19000  
No. of Transplant per pound = 9000
7. Write short notes on the following:
 

(a) Merrill Four Pasture Rotation System	(b) Plotless sampling
(c) Tree Fallow	(d) Nurse Crop
	(e) Cover crop

**COMPULSORY QUESTION**

8. Write only the correct answer in the Answer Book. Do not reproduce the question.
  - (1) Natural habitat of Blackbuck is:
 

(a) Khirthar Range Area	(b) Makran Coastal Belt
(c) Cholistan Desert	(d) None of these
  - (2) Dhaman (*Cenchrus ciliaris*) under grazing pressure is:
 

(a) decreaser species	(b) increaser species
(c) invader species	(d) None of these
  - (3) Medicago species is classified as:
 

(a) grass species	(b) forb species
(c) tree species	(d) None of these
  - (4) Dumpy Level furnishes:
 

(a) horizontal line of sight	(b) vertical line of sight
(c) curvilinear line of sight	(d) None of these
  - (5) Resumed Lands are the lands considered by big landlords under the Land Reform Act of:
 

(a) 1955	(b) 1960
(c) 1965	(d) None of these

- (6) Private owners can offer their lands to the Forest Department for afforestation under the Pakistan Forest Act, 1927 vide its Section No.:
- (a) 19 (b) 38  
(c) 57 (d) None of these
- (7) Guzara Forests were set aside to meet bonafide domestic needs of local communities at the time of first settlement of land ownership in:
- (a) 1872 (b) 1890  
(c) 1936 (d) None of these
- (8) Cock chafer grubs are the major pests which attack plants at:
- (a) seedling stage (b) sapling stage  
(c) tree stage (d) None of these
- (9) Forest Development Corporation is located in:
- (a) Mirpur, AJK (b) Islamabad  
(c) Lahore (d) None of these
- (10) Stand Table consists of columns showing:
- (a) diameter, number of trees and height (b) diameter and number of trees  
(c) number of trees only (d) None of these
- (11) Basal area is determined by measuring diameter:
- (a) near the top of the tree (b) middle of the tree  
(c) base of the tree (d) None of these
- (12) Arid Zone Research Institute is located in:
- (a) Bahawalpur (b) Mirpurkhas  
(c) Jacobabad (d) None of these
- (13) Climax species of subtropical broad leaved evergreen forests are:
- (a) Shisham and Mulberry (b) Paper Mulberry and Eucalyptus  
(c) Oak and Snatha (d) None of these
- (14) Ayubia National Park is located in:
- (a) Rawalpindi (b) Haripur  
(c) Chora Gali (d) None of these
- (15) Rain Water Harvesting is a technique applied in areas having rainfall:
- (a) 300 mm (b) 400 mm  
(c) 600 mm (d) None of these
- (16) Water Spreading is a technique applied to collect rainfall water into:
- (a) dams and reservoirs (b) streams and rivers  
(c) wells and ponds (d) None of these
- (17) Deosai National park is located in:
- (a) AJK (b) NWFP  
(c) Balochistan (d) None of these
- (18) Alkaloid Ephedrine is extracted from Ephedra plant which is naturally distributed and managed by the Forest department in the province of:
- (a) Sindh (b) NWFP  
(c) Balochistan (d) None of these
- (19) Engineer's Chain used in Chain survey has a length of:
- (a) 100 ft (b) 150 ft  
(c) 200 ft (d) None of these
- (20) Formula of glorious simplicity is represented by:
- (a) Annual Yield = Growing Stock/R (b) Annual Yield =  $V/2R \times L$   
(c) Annual Yield =  $4 V/L \times R$  (d) None of these

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